

**HITTING THE RIGHT NOTES
WITH CARROLL DASHIELL**

Also in this issue:

*Leading Indicators,
Technology with Life-Saving Potential,
Remembering the Depression*



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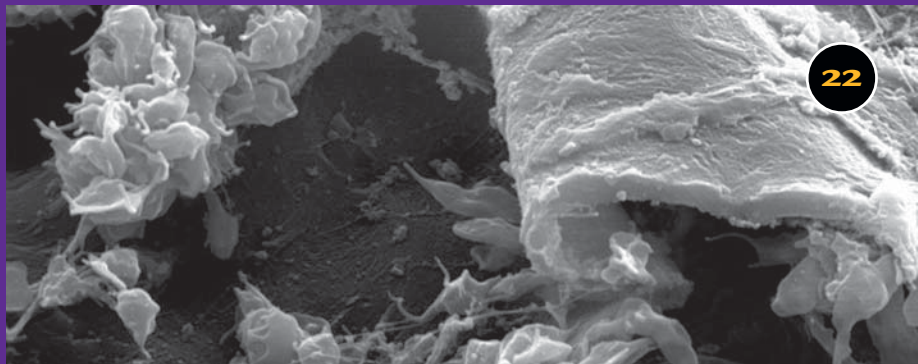
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Intensity marks Carroll Dashiell's approach to music and life.
No half stepping allowed.

on the cover

Now the director of the ECU jazz studies program, Carroll V. Dashiell Jr.

has played bass with some of the world's leading jazz musicians,

including international tours with Bobby Watson and Horizon.

"Even in college, Carroll was playing at a higher level than anyone else,"

recalls one classmate. Photo by Forrest Croce.

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Project tries to lessen likelihood of heat stress

Summertime, and the living is anything but easy for North Carolina farm workers. A hot sun on sandy loam sends field temperatures soaring beyond official readings from the National Weather Service. Shade can be sparse, and workers may be inclined to skip water breaks. With pay based on production, they want to keep moving at the risk of pushing themselves beyond safe limits. In one recent summer, these conditions led to death for one North Carolina field worker, a vegetative coma for a second and permanent disability for a third.

A four-year project of the ECU-based N.C. Agromedicine Institute seeks to alleviate and prevent the effects of heat stress on farm workers. The focus is on migrant workers engaged in some of the most strenuous activity — the stoop labor of picking cucumbers and peppers.

In the first two years, investigators have collected baseline data from 80 farm workers in Greene and Craven counties. The data cover 200 days worth of vital statistics,

including changes throughout the day in an individual's body temperature, respiration and mental functioning. Investigators also take note of clothing, diet, alcohol use, sleep, productivity and the worker's place of origin, as well as environmental conditions.

"A lot of people make the assumption that they're from Mexico so they're used to hot weather," said Dr. John Sabella, principal investigator for the project and associate director of the Agromedicine Institute. "But in fact, many we assessed come from the mountains of Mexico where they have nowhere near the high temperatures we experience here in eastern North Carolina."

For the coming season, the investigators will test intervention programs to see which best heads off problems. Water or Gatorade? With ice or without? Are workers more likely to drink adequate fluids if they're able to sip from bottles or backpacks as they work, rather than stopping for breaks?

Education will be another part of the effort: designing literature for workers and

farmers to explain how to prevent, recognize and respond to symptoms of heat stress.

"One of the deaths we had a few years ago was handled in a poor way, from ignorance about what to do," said Dr. Karen Elbertson, associate professor of nursing and a co-investigator in the project. "When he became ill, this person was taken into a hot trailer, which was the worst possible response."

Robert McClay, safety specialist with the Center for Applied Technology, is the third co-investigator. The Agromedicine Institute is a multi-institutional research, education and intervention consortium including ECU, N.C. State University and N.C. A&T State University.

"Our hope is that people will begin to be aware of heat stress and related heat illness and know that it's not enough just to put on a hat," Sabella said. "We hope to be able to make concrete recommendations of benefit to workers and growers, to ensure that workers are safe, healthy and productive and that farmers have access to a healthy work force." •

FDA approves robotics surgery

Cardiac surgeons at the Brody School of Medicine have led a successful national multi-center clinical trial studying the use of the da Vinci Surgical System for mitral valve repairs. The U.S. Food and Drug Administration approved the robotic surgical procedure for its first cardiac use Nov. 12.

Dr. W. Randolph Chitwood Jr., chairman of the surgery department, served as the principal investigator of the 10-hospital study.

The multi-center trial involved 112 patients, with ECU enrolling 22 patients whose surgeries were performed at Pitt County Memorial Hospital. Surgeons from the other participating hospitals received their training at ECU.

The trial studied the safety and efficacy of the robotic-assisted technique, which allows surgeons to repair the heart valve with only three small incisions, the largest about two inches long. This was compared with traditional

open-chest surgery. Data showed that patients undergoing the robotic-assisted surgery spent less time in the hospital, reported less pain and received fewer transfusions.

Surgeons must complete certified training before offering the procedure. Currently, ECU is the only site worldwide offering the training. ECU also is the leading international training site for other surgeries using da Vinci, such as gynecologic and urologic procedures. •

New tool helps identify chronic sorrow



"I consistently find that people get through a loss," says Dr. Georgene Eakes. "That's different from getting over it."

Over the last 15 years, psychiatric nursing professor Dr. Georgene Eakes has helped redefine the grieving process by showing that recurrent periods of grief over many years are a normal response to significant loss. Now, in conjunction with a colleague in Rhode Island, she has developed an assessment tool to help other professionals quickly identify clients who are experiencing this normal pattern of grief.

Before Eakes and her research partners described the widespread pattern they called chronic sorrow, the psychiatric literature showed the grieving process concluding with a phase of resolution, a time when the person "gets over" the loss and moves on with life. Lingering grief was seen as depression, a pathological condition in need of treatment.

The first recognized exception to this model of grieving was in the parents of mentally or physically disabled children. Those parents were known to grieve at each missing stage of normal childhood development. Eakes' own experience suggested that other types of grief also lacked a final resolution. Cancer patients she counseled — even those who'd been disease-free for years — continued to revisit the experience and be saddened by the loss of their earlier, more care-free lives.

In 1988, Eakes teamed with other nurses interested in the phenomenon to form the Nursing Consortium for Research on Chronic

Sorrow. Together, they found similar patterns occurring in individuals with a number of chronic diseases and among infertile couples. Among the bereaved, whose loved ones had died two to 25 years earlier, 97 percent experienced chronic sorrow. An article synthesizing their years of research won a 1998 award for most outstanding article in *Image, the Journal of Nursing Scholarship*.

It is unrealistic not to expect someone to revisit a significant loss at different times, Eakes said, and some losses may never be totally resolved. "I find consistently that people get *through* a loss," she said. "That's different from getting over it. The best we as professionals can do is to validate the experience and reinforce people's coping mechanisms. Maybe forewarning them or providing anticipatory guidance will lessen the intensity or lengthen the time in between (episodes of recurrent grief). I don't know that it's something we as professionals should try to fix. It's a normal, natural and therapeutic phenomenon."

Eakes developed the assessment tool with Dr. Mary L. Burke of the Rhode Island College department of nursing. It provides a 10-point questionnaire to help professional counselors quickly pinpoint cases of chronic sorrow. Eakes also expects it to be used by psychiatric researchers. •

Agrochemical scientist leads new toxicology program

Even as he was organizing his lab, Dr. James E. Gibson outlined an ambitious research agenda for ECU's new program in toxicology. It ranges from testing new pharmaceuticals to studying marine organisms and assessing pesticide safety.

Gibson arrived at the Brody School of Medicine in July 2002 with an extensive background in industry. Most recently, he was the global leader for health, environmental science and regulatory affairs for Dow Agrosciences, itself a world leader in chemicals and biotechnology for agriculture.

ECU lured him to Greenville to launch the toxicology program in the newly renamed department of pharmacology and toxicology.

As a research professor, he will teach general courses in toxicology, train research toxicologists and direct the research program.

He outlined four potential areas of research:

- **New drugs.** "Researchers working on developing new pharmaceuticals would like to know before they get too far down the road whether there are any toxic side effects to their compounds," he said. "We can finally do that here."
- **Marine organisms.** In conjunction with UNC-Wilmington marine scientists, he will examine ocean organisms for toxic properties and potential use in drugs.
- **Genetically modified organisms.**

Continuing his work in industry, Gibson expects to assess the long-term safety of these products of biotechnology.

• **Pesticide exposure.** Gibson is particularly interested in studying the effects of exposure in the concentrations and combinations that farmers and farm workers encounter. Current regulations are based on worst-case scenarios, he said. He is interested in developing a more realistic model of the risks to human safety.

While working in industry, Gibson published more than 100 papers in peer-reviewed journals and served as president of the Society of Toxicology and secretary-general of the International Union of Toxicology. •

No two ways about it, mathematically speaking

It lacks the popular appeal of *The New York Times* bestseller list, but within the specialized study of Lie groups and, especially, the subbranch called representation theory, it's a list with its own renown. Dr. Gail Ratcliff, new chair of the math department and one of the list's creators, describes it this way:

"Lie theory describes continuous symmetries. Within Lie theory, a lot of people study representations of Lie groups as actions on vector spaces. The vector spaces can have very high dimensions and can even be infinite-dimensional. In particular, we study multiplicity-free representations — those that can be decomposed in just one way. We have produced a list that classifies all multiplicity-free representations on vector spaces."

Lost? That's all right. Ratcliff understands that her work cannot be readily translated for a lay audience. She can tell you that many of the properties of fundamental particles, which physicists are only now verifying in the lab, were described long ago using Lie groups, but she cannot predict the

potential uses of her own breakthroughs in theoretical math.

"A lot of what we do in fundamental mathematics, aside from being really fun, is you create a foundation for future applications," she said. "Even with physicists and chemists, some do fundamental work without knowing quite how it will be used. You have to have faith that it will be used in the future. I think with mathematics, it's even further in the future than in other fields."

Ratcliff arrived on the ECU campus in fall 2002 with another new professor of mathematics, her husband and research partner, Dr. Chal Benson. They moved from the University of Missouri-St. Louis. The third member of their research team is Dr. Joe Jenkins, now a program officer at the National Science Foundation.

Over the past 10 years, the team has explored the nature of Lie groups and multiplicity-free representation with the help of several NSF grants. The work, including the list, has garnered them invitations to

conferences and residencies in Australia, France and Singapore. They arrived at one conference to learn that the organizers had spent a yearlong seminar studying their work.

Ratcliff said they're now looking around for new lines of inquiry. They will leave many of the remaining problems in multiplicity-free representation for others. "There was one recently," she said. "We had results where the multiplicity-free representation is given as a kind of an algebraic condition. We had an equivalent geometric condition that said this geometric condition holds if and only if this thing is multiplicity-free. ... In mathematics, it's really nice if you can say, if this is true, then that is true and conversely, if that is true, then this is true. But we could only get this one going in one direction, and we gave up. Then a couple of years ago, a young mathematician in Japan came up with the results in the other direction and published it. We were just delighted. It's always flattering when someone else picks up your work and does something with it." •

Film festival catches on

With his inaugural event exceeding expectations, broadcasting instructor Jeffrey S. Lee has announced plans to hold the second annual Emerald Eye Short Film Festival Aug. 21-23 in Greenville. Proceeds will benefit the Ronald McDonald House of Eastern North Carolina.

Lee had to shrug off the nay-sayers last year. "People said that Greenville wasn't ready for us, that people wouldn't attend, but that was not the case," he said. More than 500 people attended the two-day festival, and some were turned away the first evening.

The number of entries also proved to be a pleasant surprise. He had anticipated 15 to 20 entries, mostly from students, but an Internet announcement drew 70 films from five countries. Only half came from students. The rest were independent filmmakers trying to make a name for themselves.

"When you're a filmmaker, you're always looking for venues," Lee said. "We hope they'll bring their work here and at the same time we can spur local filmmakers to create and show their work."

Lee has added a third night for his second festival and moved the venue from restaurants to the Greenville Convention Center. Up to a dozen films — 30 minutes is the maximum length — will be shown each night, with breaks and intermissions allowing time for discussion and food and drink service. "The whole point is to watch and enjoy," he said. "If you don't like one film, it will be over soon."

A committee of students and faculty will narrow the entries to a manageable number for screening, basing their selections on entertainment value. Judges from the film industry will award the major prizes. A scriptwriters group is organizing a separate competition in conjunction with the festival.



Jeffrey Lee plans to expand the Emerald Eye Short Film Festival after a successful first year.

Last year's \$1,000 grand prize winner, Doug Van Bebber, went on to be named a finalist in the Showtime network's Latino Filmmaker Showcase.

More news about the festival will be available on the website www.emeraldeye.org.



'No pain, no gain' holds element of truth

Most of us have to push ourselves a bit to get to the long-term benefits of exercise. Older, overweight adults with osteoarthritis of the knee may have to push a little harder than most. A study led by Dr. Brian C. Focht, assistant professor of exercise and sport science, suggests that exercise-related pain may be one of the reasons this group tends to drop out of exercise programs.

The finding presents a quandary. Studies show long-term reductions in pain for arthritis patients who exercise, Focht said, but his study found that a single bout of exercise tends to increase pain temporarily. Exercise programs may need to help these patients prepare for and cope with the added pain, he said.

"We're not trying to make them work through severe pain," Focht said. "With knee osteoarthritis, most movement may provoke some level of discomfort. That's part of the challenge of getting them to be more active. What we recorded was a relatively moderate increase in discomfort that went away fairly rapidly."

Focht's study, reported in the *Annals of Behavioral Medicine*, was part of a larger project he participated in while working at Wake Forest University. The overall Arthritis Diet and Activity Program Trial compared three approaches to weight loss for obese adults with knee osteoarthritis: exercise alone, diet alone and a combination of diet and exercise. As with most of us, the combination regimen proved most effective.

Technology transfer rated high on bang for bucks

The national spotlight shone on ECU last summer when a new study ranked its technology transfer program among the nation's most effective.

A story in *The Chronicle of Higher Education* July 19 listed ECU in the top 10 on three separate measures designed to show how effective universities are in moving developments to the marketplace. For the five years from 1996 through 2000, ECU ranked second nationally in the number of startup companies formed per \$10 million spent on research, third in the number of inventions disclosed per \$1 million spent on research and sixth in the number of U.S. patent applications per \$1 million in research expenditures.

It was the second time in recent years that the university had received similar notice. A 1997 report from the Southern Technology Council ranked ECU third among Southern universities for patent applications as a proportion of research and development funding.

"I think with ECU, our faculty are so used to doing what they can with very little money that we get some extraordinary results," said Marti Van Scott, director of technology transfer. "When potential investors come to visit, I show them around and tell them that if you sponsor research here, you'll get more than you pay for."

At the same time, Van Scott recognized that the way *The Chronicle* "shook the numbers" — that is, the focus on efficiency — had a lot to do with ECU's favorable rankings. Other rankings look at such factors as total research expenditures. As a relatively new research institution, ECU has yet to surpass \$15 million in a year in research expenditures, exclusive of service-related funding. By contrast, UNC-Chapel Hill regularly surpasses \$200 million in annual research spending. ECU's licensing income and patent awards also may be low in absolute numbers, but proportionally, they show up well.

During the five years that *The Chronicle* analyzed, ECU launched two companies based on university research. EpiGenesis was created to develop new asthma medicines that had originated in the School of Medicine pharmacology department. Another, Telemedicine Technologies Co., was designed to build on the know-how developed by the school's telemedicine program.

Since then, the university has spun off three more companies. Sequoia is developing a medical information management system, and Hemocellular Therapeutics Inc. was formed to commercialize technology for freeze-drying blood platelets. (See story page 22).

The third, Janus Development, has been basking in the glow of its own media spotlight. Its first product, the anti-stuttering device SpeechEasy, was the subject of news stories on ABC's *Good Morning America*, the *NBC Evening News*, BBC Radio and a host of other television and print outlets.

Other new developments continue in the pipeline. During the 2001-02 academic year, Van Scott's office reported 11 new disclosures of intellectual property with potential for commercial development and nine patent applications. The office helps identify promising university technologies and shepherds them through disclosure, patent applications and, when appropriate, licensing.

Like the faculty accustomed to doing a lot with a little, Van Scott runs a tight ship. Until recently, the Office of Technology Transfer consisted of Van Scott and an administrative

"I think with ECU, our faculty are so used to doing what they can with very little money that we get some extraordinary results," says Marti Van Scott.



assistant, with some part-time help on research and marketing from graduate students. This spring, she gained the help of a full-time licensing associate.

Having a small office means she has to take advantage of outside resources whenever possible. A University of North Carolina board charged with improving technology transfer system wide provides a case in point. "When they say the next step is to educate (a new group) on campuses, I raise my hand and say we'll be your guinea pig," she said. "Because of my limited resources, I leverage as much as possible."

At least Van Scott may now have an easier time promoting ECU's developments to businesses. In response to all the recent publicity, they've started calling her. "People are realizing that a small university can play a role in research," she said. •

ECU joins nationwide 'Tree of Life' project

Faculty and students in the biology department will participate in a \$17 million national research program sponsored by the National Science Foundation. Called "Assembling the Tree of Life," the project aims to discover the evolutionary relationships of millions of species of life on Earth. It will involve multidisciplinary teams from more than 25 institutions with expertise ranging from paleontology to molecular biology.

ECU is slated to receive \$80,000 for its portion of the project. The "Tree of Life" program is designed to identify experimental systems for biological research, determine which genes are common to many forms of life and which are unique, track the origin and spread of emerging diseases, prospect for pharmaceutical and agricultural products, and evaluate risk factors for species and ecosystem conservation.

The award helped move the federal government into position as the university's largest source of external funds for research, service and instructional programs. According to the Office of Sponsored Programs, federal agencies awarded ECU \$12.8 million in grants and contracts in 2001-2002. This represented an increase of 27 percent over the previous year and accounted for 37 percent of all external funding.

Federal agencies contributing to these totals included the National Institutes of Health (\$4.4 million), the National Science Foundation (\$2.4 million), the Department of Education (\$1.5 million) and the Department of Defense (\$867,500). Among other noteworthy awards were \$279,000 from NIH for research into the role of infectious agents in atherosclerosis (fatty deposits on blood vessel walls) and \$140,000 from the NSF for collaborative research in evaluating groundwater discharge into coastal waters.

Overall money received for grants and contracts declined in 2001-2002. The university received a total of \$34.9 million from 369 grants, contracts and other awards. Last year, the university received nearly \$41 million for sponsored programs.

Despite the overall drop, funding for research increased by nearly \$1 million dollars. It accounted for 40 percent of external funding, or just over \$14 million. •

Time in Eastern N.C. on agenda for community engagement office

Beginning in May, Dr. Ronald H. Nowaczyk expects to be doing a lot of traveling. As associate vice chancellor for community engagement, Nowaczyk plans to spend at least two days a week visiting communities throughout eastern North Carolina to make it easier for businesses, governments, schools and nonprofits to identify ways ECU can be of service to them.

The new Office of Community Engagement is part of the reorganized Division of Research, Economic Development and Community Engagement. Vice Chancellor Thomas Feldbush appointed Nowaczyk, current chair of the psychology department, to lead the effort. Joining him on a part-time basis as assistant vice chancellor will be Dr. Donald E. Ensley, who also serves as chair of the Department of Community Health within the School of Allied Health Sciences.

Although ECU has long supported service to the region, Nowaczyk said, the goal of his office will be to take that service up a notch, in part by increasing visibility and making it easier to locate the right people on campus. His office will provide a primary point of contact that can be reached by phone or by a web site, which also will carry examples of community engagement projects. His travels through the region will provide another means of contact.

"What we want to do is help communities solve their problems wherever we have the expertise, skills and resources that can be directed their way," Nowaczyk said. "If we don't have the expertise they need, then we'll help them find it elsewhere."

Ensley will focus on leadership development and engagement with minority communities. He is working with other UNC institutions to create a consortium to design a common leadership program they can provide for grassroots organizations.

A Committee on Community Engagement has been formed to help the office shape its programs and outreach efforts. Nowaczyk said the committee initially includes 15 people, eight of whom represent Hyde, Pitt, Nash and Edgecombe counties. It may be expanded later. The committee will help define community engagement. "We don't want it dictated by our side," Nowaczyk said. •



Donald E. Ensley will focus on leadership development and minority outreach as assistant vice chancellor for community engagement.

LEADING INDICATORS:

Researchers across the ECU campus devote special attention to issues of particular importance to the university's home region.

The articles that follow describe a few of their efforts. Projects from the Regional Development Institute paint a more accurate picture of eastern North Carolina's economy.

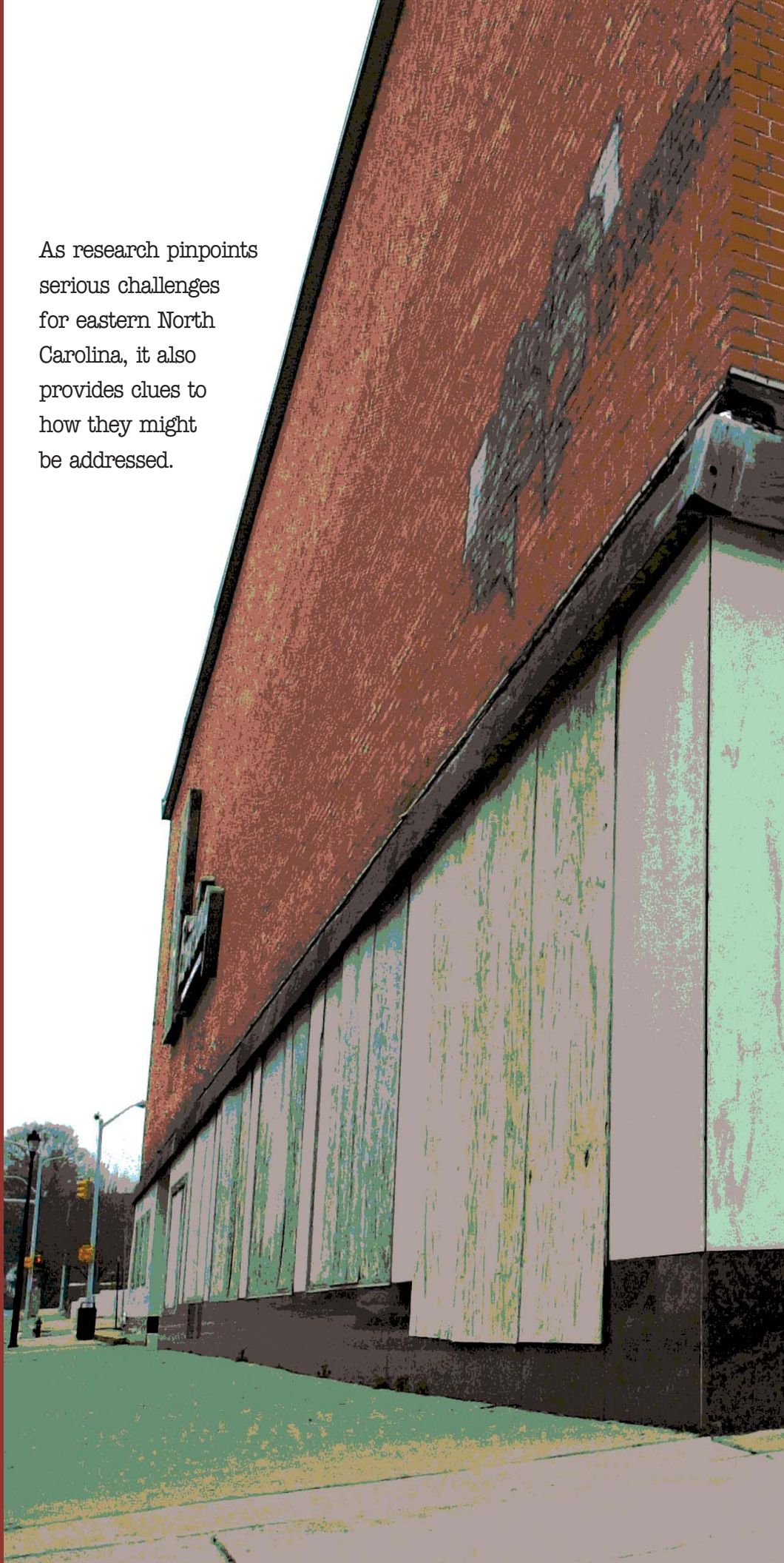
One, which details a broad concentration of poverty throughout the southeastern United States, has led to a congressional bill to establish an economic development commission for seven states. Another shows that where once tobacco was king, manufacturing now reigns as the dominant economic engine.

From the geology department, Dr. Richard Spruill's studies have created a better understanding of the region's groundwater supply, why it appears to be drying up and how communities can respond.

Finally, Dr. Christopher Mansfield of the Health Services Research and Development Center turns attention to eastern North Carolina's high rate of premature death and its causes.

Continued

As research pinpoints serious challenges for eastern North Carolina, it also provides clues to how they might be addressed.







LEADING INDICATORS:

Study leads to
economic development bill
in Congress

With the Appalachian Regional Commission as a model, legislation before the 108th Congress would target up to \$40 million a year for economic development projects in impoverished regions of the southeastern United States, including eastern North Carolina. The funds would be administered through a federal-state partnership called the SouthEast Crescent Authority.

The legislation grew out of research conducted by the ECU Regional Development Institute and supported by regional planning agencies throughout the seven-state area. The purpose is to alleviate the persistent poverty that plagues much of the region.

"The image of the New South that we've all come to believe in is really the image of Charlotte and Raleigh and Atlanta and Miami," RDI Director Albert A. Delia said. "When you excise those areas out of the New South, you get very much the Old South and the poor South."

RDI began its investigations at the behest of four multi-county development organizations in northeastern North Carolina. "Northeast by West," a report published in September 2000, compared the economies of northeastern and western North Carolina over the previous 35 years. Although both regions had long histories of entrenched poverty, the west had made marked improvements during that time while the east continued to struggle. The difference was attributed to the establishment of the Appalachian Regional Commission in 1965.

"It was not necessarily because of the

massive federal investment in those areas, although the investment was sizable," Delia said. "It was because the federal government, working with the states, local governments and the private sector, had a catalytic effect on those localities. Things happened because of investments in roads, water and sewer infrastructure, planning, education and on and on. It became easier to attract business and people to the area. The end result is that those counties have done very well vis-a-vis eastern North Carolina."

Delia and the project's sponsors recognized that state investments on a par with the ARC were unlikely. For federal assistance, they would need a broader base. An examination of the Atlantic and Gulf Coast region stretching from Virginia to Mississippi revealed a similar plight. Out of 428 contiguous counties, 40 percent qualified as areas of persistent poverty, defined as an average poverty level of 20 percent or more for at least 30 years. This definition was based on standards set by the U.S. Department of Agriculture and used data from the U.S. Census.

"We didn't want to be accused of cooking the books," Delia said. "We looked for the toughest existing definition of distress and used somebody else's numbers to draw the picture. The 20 percent figure is completely arbitrary, but it was the toughest we could find. At 15 percent (of the population in poverty), we go to 70 percent of counties persistently in poverty, and that (15 percent) is still higher than the federal average poverty level."

In raw numbers, nearly 5 million people in the area had incomes below the federal poverty level, which is widely recognized as understating the cost of living. Unemployment figures were similarly high. Nearly 60 percent of the counties had unemployment rates above the national average, and one in 10 had a rate at least double the national average. To make matters even worse, these seven states also are hit by natural disasters — primarily hurricanes and floods — two to three times as often as other areas of the country, adding to their financial problems.

Scanning the nation, Delia and his colleagues at RDI, S. Richard Brockett and Malcolm T. Simpson Jr., found six multi-state regions or groups with similar historical patterns of poverty. For the other areas, federal antipoverty agencies such as the Appalachian Regional Commission, the Mississippi Delta Authority and the Southwest Border Partnership had been established. Only the southeastern coastal area lacked a federal authority to address economic development.

Delia spent a year presenting his findings throughout the seven-state region, beginning with the regional development organizations. Eventually, those presentations included governors and members of Congress, and they culminated in a pitch for establishment of the SouthEast Crescent Authority.

“Where appropriate, we asked for them to pass judgment on the proposal,” Delia said. “Of those that did, we had completely unanimous support to go forward. There was no opposition from any of the elected bodies or boards or commissions.”

In January 2002, as RDI published a summary of its findings, the effort moved to Congress, where authorizing legislation picked up more than 30 co-sponsors. The co-sponsors, both Democrats and Republicans, included representatives from each of the seven states and some from outside the region. One hearing was held in the fall, but Congress adjourned without final action.

On the first day of the new congressional session, Rep. Mike McIntyre of North Carolina’s 8th District reintroduced the measure (H.R. 141) on behalf of himself, Rep. Robin Hayes of the 6th District, and Rep. Brad Miller of the 13th District. McIntyre and Miller are Democrats. Hayes is a Republican.

After coming on board themselves, the local regions’ economic development agencies worked with their congressional delegations to build bipartisan support for the measure, said Dan Bollinger, executive director of the Southwest Georgia Regional



Albert A. Delia

The image of the New South that we’ve all come to believe in is really the image of Charlotte and Raleigh and Atlanta and Miami. When you excise those areas out of the New South, you get very much the Old South and the poor South.”

Development Center and chair of the SouthEast Crescent Authority steering committee. The support followed because both the need and potential remedy were well documented, he said.

“This is a real opportunity, as opposed to an idea or a concept,” Bollinger said. “The research showed the areas served by the ARC have had tremendous success in the area of economic development and community development.”

The legislation calls for the commission’s governing board to be made up of a federal representative, appointed by the president, and the governors of each of the seven states or their representatives. The states are Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama and Mississippi. The authority would exclude counties already covered by the Appalachian Regional Commission or the Delta

Commission. Funds, up to \$40 million a year for fiscal years 2004 through 2008, would be used to assist such economic development projects as business development, job training or employment-related education, local planning, leadership development and public infrastructure, from water and sewer capacity to telecommunications systems. The bill goes first to the House Transportation and Infrastructure Committee.

Despite the bipartisan support, no one is predicting easy passage. “I think the authorization is obtainable,” said Matthew Chase, deputy executive director of the National Association of Development Organizations. “The more difficult piece is securing funding. In this climate, that will be difficult.” Difficult, but not impossible. “On the merits of the proposal,” he said, “it’s pretty hard to refute.” •



LEADING INDICATORS:

Geologist plumbs the depths
of the dwindling aquifers

In almost no time, it seems, eastern North Carolina has gone from a land of limitless fresh water to one of scarcity. Where artesian wells once bubbled to the surface of any drill site, the aquifers that supply much of the region's drinking water are dropping as much as 15 feet a year. New state regulations will require cities and other users to reduce withdrawals from those aquifers by up to 75 percent over the next 16 years.

What's going on? How did things change so suddenly?

The growth of population and industry provide a part of the answer. Now an article to be published in the summer 2003 issue of the *International Journal of Hydrology* suggests there's more to it. It seems that for years, even the experts had miscalculated how fast the aquifers could recharge themselves. Dr. Richard Spruill, associate professor of geology, and his co-author, former N.C. State University professor Ralph Heath, re-examined historical data to conclude that water from the surface seeps into the deep aquifers at a rate only one-twelfth of previous estimates.

Conventional wisdom had placed the recharge rate at 50,000 gallons of water a day per square mile. "Those numbers were based on theories developed at the time the coastal population was not great, so no one questioned them," Spruill said. "But when water levels started falling, we said something has to be wrong."

Spruill and Heath took actual data on

water usage and aquifer levels going back to the 1960s. Then, using a mathematical model, they calculated the recharge rate at 4,000 gallons a day per square mile, significantly lower than earlier estimates.

The journal article represents only the most recent contribution of Spruill's 15-year study of eastern North Carolina's groundwater. "What I've been doing is attempting to unravel the geological complexity of the major layers that produce the water that we rely upon in the coastal plain," he said.

In the process, he has become recognized as the leading authority on groundwater in the east and a tireless public servant. His phone rings constantly with requests for help, willingly answered, from municipal water managers, engineers on contract and private well drillers. He helped shape the state's new aquifer regulations and rallied public support for them through countless presentations around the region. Now he's helping communities devise creative ways to meet the growing demand for clean water, without overtaxing the aquifers.

Stacks of technical reports detail Spruill's investigations. County by county, he has mapped the layers of rock, sand and clay below the surface, pointing to which layers contain water and how much water they can produce. "Cones of depression" show where the water levels are dropping in response to overuse.

For Spruill, such knowledge always begins with a hard hat, a pair of muddy boots and a good working relationship with well drillers all over the east. "You figure that out in only one way," he said. "You have to stand behind the drill rig for countless hours. I call the drill rig the great truth machine. You can sit in your office and theorize about what's in the subsurface all you want to, but when you're drilling and the materials come up to the surface and you look at them, that's when you know what's in there."

From his first studies, Spruill quickly recognized that the east's groundwater resources were in trouble. Beginning in 1989, he began educating water users about the impending problems and the need for long-

term protection of the groundwater supply. In April 2002, the state legislature agreed and passed the Central Coastal Plain Capacity Area Rule, authorizing regulations for the 15 counties most severely affected by overdrafting of the aquifers. Spruill served on the stakeholder committee that developed the rules, which took effect in August.

John Morris, director of the state Division of Water Resources, praised Spruill's contributions to the process. "Since groundwater is out of sight, it's harder to understand than rivers and reservoirs," he said. "Richard went way beyond the call of duty to educate people who needed to understand. ... I think he must have some Baptist preacher genes in his background. He can be very passionate and relentless. If he doesn't get his message across, he'll be back."

With the new regulations in place, Spruill hasn't slowed down. "I feel an obligation to help find alternative sources of water and increase conservation," he said.

One of the most innovative possibilities is being tested by the Greenville Utilities Commission. The utility, which uses well and river water, is experimenting with a system that would allow it to store treated water from the Tar River in underground aquifers for later use.

"We're fortunate here in Greenville that we have the Tar River," Spruill said. "Most of the year, under state regulations we can take more water out of the Tar River than we can consume. So if we take the excess from the Tar and store it, then if we get to a summer like 2002 with the drought...we can take a majority of that back out of our storage aquifers and use it."

Over a 2 1/2-year period, Spruill traveled with Greenville Utility staff members to sites in Virginia and South Carolina where similar systems are in use and worked to persuade the state to allow a limited test. The permit, issued last fall, is North Carolina's first for this process, called recharge and retrieval.

"Dr. Spruill has been a member of the team at every step of the way," said Ronald

D. Elks, assistant general manager of the commission. Elks said he consults with Spruill frequently on any number of water-related issues. "I just pick up the phone and call, and he drops by," Elks said. "He's done a tremendous amount of work for the community."

As Spruill monitors the recharge and retrieval tests, which will ensure that the natural aquifer suffers no harm, he also is questioning whether regulations on surface water withdrawals could be modified safely.

Current rules protect rivers by establishing maximum withdrawals based on drought conditions. Specifically, the rules limit withdrawals to 20 percent of the river's lowest recorded flow. Spruill is asking whether that limit could be raised during high water, increasing the excess capacity the city could pump into the aquifer.

"With Hurricane Floyd, we had 88,000 cubic feet of water per second flowing by Greenville," he said. "Normally, it's only 2,000. What if we took advantage of another 200 to 300 cubic feet and treated it? You'd never miss it. We're working with people in the Division of Water Resources. They say it has some merit and needs to be discussed."

Communities that lack rivers will require more creative solutions. "The (aquifer) rule has fostered a sense of cooperation, interconnection and diversification of water resources in the coastal plain," Spruill said. "I think I'm most proud of that as my contribution."



Richard Spruill has been recognized for his work on Greenville's aquifer storage and recovery project. "His involvement is key to the project's success," Ron Elks, the commission's assistant general manager, said when the city and the Greenville Utilities Commission presented Spruill a plaque of appreciation March 18.

An equal part of the solution, he recognizes, is slower to be realized. "We will not conserve water as long as our water bill each month is less than the cost of hand-delivered, hand-tossed pizza," he said. "In some communities, the rates are only \$1.50 for 1,000 gallons. What incentive is there to conserve?"

"Conservation is difficult because we live in what has been seen as a water-rich environment. We get 55 inches of rain a year here in Greenville. Our rivers except during a few weeks in the summertime have plenty of water in them. We've had wells that would flow freely out onto the land surface for years. Therein lies the value of education, not in peer-reviewed journals but to get out there and say to people we have a problem, and with equal verbiage, here's part of the solution. We have to point out the problem and be involved in solution." •



LEADING INDICATORS:

Accidents, strokes
lead reasons for
high numbers of
early deaths

If Dr. Christopher J. Mansfield needs a reminder of the health problems plaguing eastern North Carolina, all he has to do is breathe deeply. The Center for Health Services Research and Development, which he directs, sits within easy whiffing distance of the burgers and fries dished up steadily at the fast-food emporiums on nearby Memorial Drive.

Chances are, however, that Mansfield needs no such reminder. He has looked too closely and too long at the data that show disproportionately high incidences of heart disease, stroke and diabetes. He knows eastern North Carolinians die much too early compared with the rest of the state and the nation. And he has led the effort to put the raw statistics into a clear and compelling format.

"If the population is the patient, then we are keeping the patient's chart," he said. "We are structuring the record so that it provides some meaningful information."

A few years back, Mansfield zeroed in on premature mortality, or years of life lost to early death, as the best current measure of the health of the region. He came up with a startling finding. Eastern North Carolinians were dying earlier than residents of any state in the country. Treated separately in state rankings, it would have come in 51st, dead last. It's only a small consolation that newer data moved the region up to 50th place. "Thank goodness for Mississippi," Mansfield said with a shake of his head.

The Center for Health Services Research and Development was created soon after the School of Medicine to serve as the intelligence center for the life sciences. With

staff and graduate students, Mansfield mines data from a variety of federal, state and local sources to identify problems, resources and ways to close the gap between the two. In addition to health statistics, this has included tracking the supply of physicians in the east, in part to help determine whether the medical school is fulfilling its purpose of increasing the supply of medical practitioners. The center also maintains a physician database that it makes available to hospitals throughout the region, and it recently began tracking the work force in allied health fields, such as pharmacy, nursing and dentistry.

But it is in describing the health of the region that the center's work has coalesced most notably. Each year it produces the *Eastern North Carolina Health Atlas*, which details for the region and each of its counties the population distribution and changes, leading causes of mortality and areas with health-provider shortages. Other reports describe such issues as health insurance coverage and barriers to health care. For clarity and conciseness, though, the reports on premature mortality stand out.

The reports originated as an attempt to provide the medical school with a measure of whether the increased supply of physicians and services was having the desired effect. Mansfield considered several possibilities, including statistics on the availability of health care, occurrence rates for certain diseases and death rates. But he sought more. He wanted a way to measure the end result of better health care: length of life and quality of life, so far as it relates to health and function.

He zeroed in on premature mortality, which measures the number of years lost when a person dies before age 75, the average life span. The assumption, he said, was that up to age 75, most people have an acceptable quality of life. The measure had the advantage of being based on available data that could be tracked over time. It also could be used to study disparities — across geographic areas, race and gender, for example. So all he and his colleagues at the center had to do was program the computers

to perform 20 million or so calculations, and he had his answer.

It wasn't good and still isn't. The health of eastern North Carolinians lags well behind the rest of the state. "For premature mortality, eastern North Carolina vs. the rest of the state, it's a 10 to 12 percent difference and not getting any closer at all — and may be growing," he said.

When he looks at the causes of death, the differences are even more striking. Years of life lost because of accidental injury are 40 percent higher than the rest of the state. With stroke, 35 percent higher; diabetes, 28 percent; and heart disease, 23 percent.

Breakdowns by subgroups show some interesting differences. Gender disparities are closing for good reasons (better cardiovascular health for men) and bad (more women are dying of chronic lung disease). Racial disparities, however, remain significant. Years of life lost for nonwhites exceeds that of whites by almost 75 percent.

"We also see a rural-urban disparity," Mansfield said. "When we looked at the rural-urban and racial disparity together, there was a surprise for us in that the racial disparity is actually greater in the urban counties than the rural counties. The racial differential is a statewide phenomenon and in rural areas, the mortality of whites is much worse than it is in urban areas, so in rural North Carolina, whites and blacks have a much more similar health experience."

The figures emphasize previously



Dr. Christopher J. Mansfield

"A lot of improvement in health will come with improved prosperity, but awareness and taking responsibility for community health and individual health are within our grasp."

recognized health problems and give weight to the factors that kill people at younger ages. Said Mansfield, "This is important when we look at public policy decisions about investing money in the health-care system, \$10 million that may have the ability to save 1,000 people but only preventing one year of premature mortality weighted against \$10 million that may have the effect of saving 1,000 who would have died of accidents, which typically occur much earlier in life."

Still, it's a leap from understanding the cause of death to changing it because so many factors can play a role. Is it a question of wealth, education, genetics, social environment, physical environment, nutrition, spirituality, access to health care or some combination? "We don't have the data to prove exactly which field we ought

to intervene in, but we have some models and some common sense," Mansfield said. Some of the simplest changes — from wearing a seat belt to eating less and exercising more — can achieve the greatest and most cost-effective results.

"I think there is a lot of mileage to be made in behavior modification and in training health-care providers to communicate better with patients so that they understand their own role in the risk factors," he said. "A lot of improvement in health will come with improved prosperity, but awareness and taking responsibility for community health and individual health are within our grasp. We can cause our communities to be more healthy. We can encourage individuals to take more responsibility for their health behavior." •



LEADING INDICATORS:

New analysis shakes up assumptions about economic strengths

Old truths die hard, or at least slowly. A new study from the Regional Development Institute has turned a long-accepted view of eastern North Carolina's economy on its head. The study shows that manufacturing, not agriculture, gives the east its biggest economic punch. And it's not even a close call.

The impetus for the study came several years ago, said Albert A. Delia, the institute's director. During the last round of military base closings, an institute analysis pegged the military's economic contributions to the state in the neighborhood of \$13 billion annually. Most of that impact falls in the east, which is home to four major bases.

"To put this in context, it was bigger than the impact of tobacco, and that was before tobacco took a downturn," Delia said. "I found that striking for a state known throughout the world as a tobacco state."

With all the economic turmoil of recent years, Delia decided to take another look. This time he would focus on determining the relative strength of the five largest economic sectors in 40 counties of eastern North Carolina. Those five, he said, were clear: agriculture, manufacturing, government, military and tourism. From there it became more complicated.

"Each has different components and reports things differently and to different agencies, so comparing one to another is very difficult," he said. "We talked with a number of economists and mathematicians and finally figured that economic impact ultimately is all about payroll dollars. So to simplify, we compared the economic impact of the payroll dollars of each of the five. That means in our figures the total impact is diminished somewhat, but in relation to each other, it's consistent."

The analysis included employees' take-home pay and the indirect impact as that money is spent, known to economists as the multiplier effect. In the final assessment, manufacturing topped the list, accounting for 36 percent of the economy in the east. Government, defined as non-military federal, state and local services, followed at a close second. Agriculture, on the other hand, came in fourth at only a third the size of manufacturing. The military fell in the middle, and tourism lagged far behind in fifth place.

The study didn't stop there. It also included a public opinion survey to determine how the residents viewed the different sectors' relative contributions to the economy. Those polled pegged agriculture as the region's top economic engine, followed in order by tourism, manufacturing, government and the military.

"The actual economic impact is almost a perfect reversal of what public perception is," Delia said. "That's important because public perception is almost never very different from public leaders' perception, which means that leaders of our region at whatever level, local or state, have the perception that agriculture and tourism are the most important sectors of the economy in eastern North Carolina. That in turn is important because rational leaders (are) going to make decisions and policies — sometimes to the detriment of other sectors of the economy — based on what they believe is the most important sector of the economy. And the reality is, it's not."

As an example, Delia said, numerous state policies have benefited agriculture and tourism but the military has been left alone. "Of the five biggest sectors, (the military) is the only one that can be considered a single industry," he said, "so arguably the military is the biggest single industry in the state, and we've had no policies to help it."

The N.C. Military Affairs Commission has taken note of Delia's work and is trying to spread the message. It also is seeking funds to update his earlier study showing the full effect of the military statewide.

The eastern North Carolina study was funded by the Z. Smith Reynolds Foundation. •



Manufacturing accounts for 36 percent of eastern North Carolina's economy — the largest single sector. Government, defined as non-military federal, state and local services, followed at a close second.

“The actual economic impact is almost a perfect reversal of what public perception is. That’s important because public perception is almost never very different from public leaders’ perception, which means that leaders of our region at whatever level, local or state, have the perception that agriculture and tourism are the most important sectors of the economy in eastern North Carolina. That in turn is important because rational leaders (are) going to make decisions and policies — sometimes to the detriment of other sectors of the economy — based on what they believe is the most important sector of the economy. And the reality is, it’s not.”

Total Payrolls by Economic Sector

	Discretionary payroll income	% total
• Total amount	\$9,053,851,186	100
• Manufacturing	3,358,321,883	36
• Government	3,013,753,062	32
• Military*	1,978,746,932	15
• Agriculture**	1,125,082,197	12
• Tourism	457,984,800	5
* Combined active duty and civilian		
** Includes proprietor income and labor		

Perceived Most Important Economic Sector to Eastern North Carolina

Sector	% Responses
• Agriculture	34.8
• Manufacturing	22.9
• Not sure	18.2
• Tourism	9.9
• Government	9.1
• Military	5.2

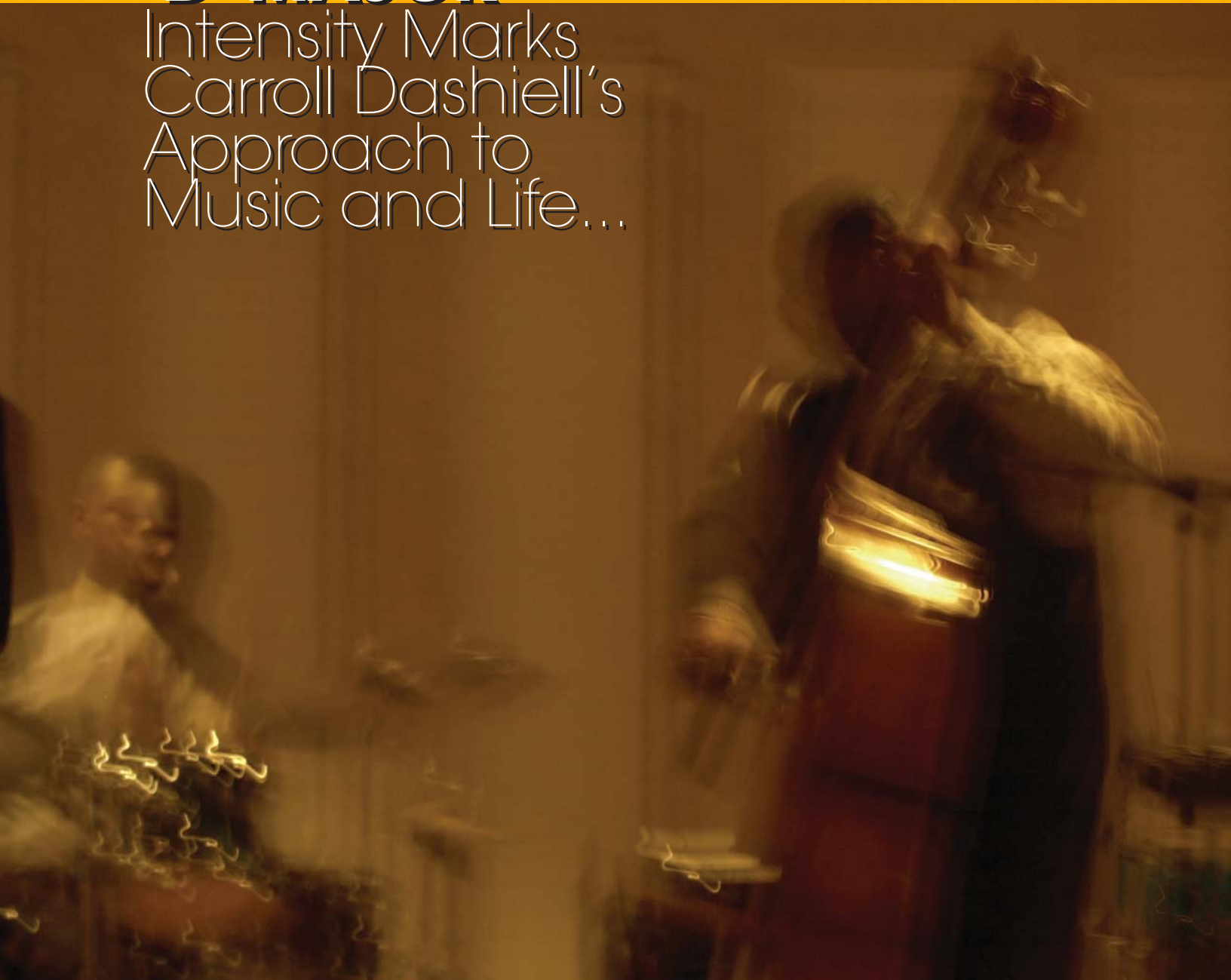
Perceived Most Important Economic Sector to Eastern North Carolina in the Next Decade

Sector	% Responses
• Manufacturing	26.7
• Agriculture	23.2
• Not sure	19.5
• Tourism	12.5
• Government	12
• Military	6

From “Eastern North Carolina’s Economy: The Economic Impact of Five Sectors—Manufacturing, Government, Military, Agriculture, & Tourism,” ECU Regional Development Institute

'D' MAJOR

Intensity Marks
Carroll Dashiell's
Approach to
Music and Life...



With his son and namesake on drums, Carroll V. Dashiell Jr. leads the CVD Ensemble with his bass playing.

...No Half Stepping Allowed.

It may have been the last time anyone called Carroll Dashiell little.

Practicing music had taken a back seat to the other conflicting demands of adolescence, and he was missing note after note on his string bass. "Little buddy," teacher Authur Caphart said, "you've got to get out of the gym and come in here and play that B flat major scale. You've got to study it."

The admonition hit home. By the time he was 16, Dashiell had played every Beethoven symphony, received his musician's union card and earned a scholarship to the Tanglewood Institute, where he would play with members of the Boston Symphony and Boston Pops. He went on to travel world-wide and record with jazz greats such as Bobby Watson, Maurice Hines, Stephanie Mills, Ray Charles and the Fifth Dimension, all before joining the ECU faculty as director of the jazz studies program and the ECU Jazz Ensemble. He was then all of 28.

Fourteen years later, Carroll V. Dashiell Jr. is a giant of a man, tall and wide, with a ready hug, a contagious laugh and a cherubic face that belies the intensity focused on any task at hand. His reputation as a jazz bassist towers alongside him, attracting Billy Taylor, Wynton Marsalis, Grady Tate, Vanessa Rubin, Benny Green and other guest artists to ECU. For his students, he remains the big man on campus long after they've graduated. They return year after year to share their experiences and acknowledge that yes, he was right when he told them they had to be professional, versatile, determined. He's even a big family man, raising four children ages 12 to 18, with his wife, Rhonda.

Recently, Dashiell has been mastering his latest CD, *Hier to the Throne*, for release this spring. "It's been so long, it's probably another debut CD," he said. It is his first release since 1984, but the 15 tunes show this is no newcomer. All his original compositions, they chronicle his development from jazz ballads to fusion and funk. It was recorded by Dashiell's group the CVD Ensemble with fellow faculty member Jeffrey Bair on saxophone, Dashiell's older son, C.V., on drums, and Dashiell on bass and keyboard.

Bair plays with Dashiell often now but remains as impressed as the first time they met. "By far he's the best bass player I've ever played with," Bair said. "His bass playing is as good as any you're going to hear on recordings of any major label. And his son, good gracious. This boy is something else. He's 17 and plays like a 50-year-old."

Dashiell was only a lad when he was introduced to the string bass. A native of Washington, D.C., he was playing viola in the elementary school orchestra when, in the fifth grade, the director shifted him to the bass. "I was the only one big enough to carry it from the third-floor storage room," Dashiell said.

In retrospect, a simple matter of convenience seems more like destiny. Dashiell became enamored of the instrument. An only child surrounded by a family of amateur musicians — his mother sang in two church choirs, his father led a male spiritual group, and his favorite grandmother played piano and sang in four choirs — he received all the encouragement he needed.

In junior high, he earned a spot in the D.C. youth orchestra program and began

private lessons. While still in high school, he was invited to join the Moonlighters Band and Show, which played weekends at area clubs and events. The other members were all long-time musicians.

"I was a little reluctant about hiring someone that young, but I was impressed," said the group's leader, Dr. William Clark. "He was exceptional, and he was very serious about learning to master the instrument. He was always practicing and rehearsing."

At the time, Dashiell considered jazz to be a side interest. He planned to accept a scholarship to study classical music at Boston University. The summer before college, however, he was invited to tour Japan with the Washington Philharmonia and would return too late to enroll for B.U.'s fall semester. But the director of Howard University's jazz ensemble, Fred Irby, held the door open.

Dashiell recalled arriving for his first rehearsal freshman year. "The pianist in the band was Geri Allen, the phenom," he said. "Then there was Wallace Roney, who basically Miles Davis passed his baton to, and Greg Osby and Gary Thomas. All of these people have gone on to become top jazz musicians in today's society. That was band rehearsal. I said *this is happening*."

For others, Carroll Dashiell became a happening all by himself. Michael Friend, percussionist and founder of the D.C. theatrical group Soul in Motion Players, became one of Dashiell's close buddies. He remembered Dashiell's encouragement in those early years and the introductions to professional musicians and bands, where Dashiell was already known.

Continued



"Once you're out of here, nobody wants you to play timid," Carroll Dashiell tells his students.

"Carroll is very genuine," he said. "What you see is what you get. Right from the start, he'll do whatever he can for you, without question."

Sometimes what he did was to set the example. "Even in college, Carroll was playing at a higher level than anyone else," Friend said. "There was no way you could play with Carroll and not play with intensity, otherwise you'd be left behind. That has carried over into how I approach music and everything else. I think everyone we were in college with came away with that."

What was true of Dashiell's performance applied to his compositions as well. "The stuff playing on smooth jazz stations now is the stuff he was composing in the '80s," Friend said. "He was way ahead of the industry."

Eventually, Dashiell would write the ballad "Love Prevailed" for his wedding, but first came other ballads that the Howard jazz ensemble put on its albums. One song, "Loving You Has Been an Ecstasy," proved especially popular, getting airtime in at least 35 states and 13 countries. When the Howard ensemble flew into Florida for an engagement, they heard the tune wafting out over the airport sound system.

In the years after college, airports became Dashiell's second home. Tour buses, his first. Professional tours would hit 30 cities in 35 days, sometimes around the United States, often in

Europe, and occasionally stopping in places like Bogota, Columbia. Mixed in with these came the steady gigs — eight performances a week for six months on Broadway or four months in Chicago with Maurice Hines — but all away from the Washington home he shared with Rhonda, the college sweetheart he married after graduation.

The highs of those years were spectacular. He recalled a sea of hands waving with the music during a nighttime performance in a European stadium. Best of all was the start of one of those whirlwind tours with Bobby Watson and Horizon. They'd just arrived in Italy for a jazz festival and had a night to relax. After wandering down to the main festival venue, they sat on the edge of the stage as Dizzy Gillespie and the U.N. All-Star Big Band played, followed by Max Roach with his quintet and finally, Miles Davis.

"This was the first time I had seen Dizzy, Max and Miles on the same stage on the same night," Dashiell said. "It knocked me out. It was a part of history."

Despite the highs, the road hazards were great. Poor diet. Homesickness. He missed the births of two his children. "I didn't see my baby boy until he was almost seven weeks old," he said. Though he continues to book occasional tours during school breaks, they are becoming less and less frequent.

Dashiell's longtime mentor worries that he's backing off too much. Billy Taylor's mother lived next door to Carroll's family, and Taylor encouraged the budding musician from the start, practicing with him, giving him tickets to concerts. In later years they played together professionally a few times and have stayed in touch. Taylor called recently to say hello.

"He was talking to Rhonda but fussing with me," Dashiell said. "He wants to make sure I'm still playing, not settling. It does get frustrating sometimes, from the standpoint that you're not playing on that level consistently. There are things you want to reach for that if you're primed and playing all the time, it's there. Now I have to work to get it back into the fingers. But that's the joy also, of constantly trying to progress."

Dashiell expects the same constant striving of his students. "No half stepping," he lectures.

One Friday afternoon, rehearsal was barely 30 minutes old, and already he had the Jazz Ensemble sweating. The drummer was doing pushups for missing an intro, and Dashiell was telling the bass guitarist where she'd gone wrong: "You stopped playing and started theorizing." By the time they'd made it through Duke Ellington's "A Train," Dashiell was sweating, too. Although he often smiled and occasionally joked, he never let up. "Play aggressively and forcefully all the time," he said. "Once you get out of here, nobody wants you to play timid."

Dashiell runs the jazz studies program like the strict patriarch of a family. He demands that students adhere to practice schedules and regimens, that they dress appropriately for performances, that they represent the university — and him — well in their conduct, appearance and performance. "I guess that's old school but that's OK," he said. "You have to give jazz the same respect you would if you were playing in the Boston Symphony."

At the same time, the man the students call "D" frets over them — reminding vocalists to wear scarves around their throats in winter, encouraging, chiding — and keeps an open door. He tells them to stop by anytime they need a sympathetic ear for the music or their problems. Most do.

"He shows absolute dedication to his students, way beyond what you would normally

expect a university teacher to do,” Bair said. “He’s not just a teacher; he’s a mentor. And students reciprocate. Those who left here years ago are still coming back. Normally, after a few years the rapport isn’t as strong. You don’t see that drop-off with Carroll. And it’s not that he’s soft. He demands the absolute best of them.”

Bair understands how difficult that can be. “I know I’d better bring my A game to rehearsals,” he said. “Students would say that, too.”

One who does is Mitch Butler, who earned undergraduate and graduate degrees in jazz and now plays with the N.C. Jazz Repertory Orchestra, the Gregg Gelb Swing Band and other groups in the Raleigh-Durham area. “Live the music you want to perform,” he recalled Dashiell urging in between stories of his professional playing days and lectures on how to conduct themselves. Two years after graduation, Butler said, Dashiell continued to encourage him and open doors. “Nobody is quite the motivator of Carroll Dashiell,” he said.

Dashiell’s own drive helped him build the jazz studies program from a couple of bands and individual instruction into a full curriculum offering bachelor’s and master’s degrees. The faculty has doubled in size, and the Jazz Ensemble has become a regular fixture at jazz festivals and conferences around the country. This summer, the band will make a return engagement at the JVC Jazz Festival in New York City. It previously played at Carnegie Hall and Switzerland’s Montreux Jazz Festival, among other venues, and won the Jazz Fest USA Gold Award in 1997.

It all began when Dashiell arrived on campus in 1989 and mapped out a 10-year plan for developing a jazz studies degree. The approach was typical, according to Rhonda Dashiell. “He’s very focused and methodical,” she said. “When we were dating, he said by the time I’m 40 I want to make X amount of money, own a home, have a business. I said good for you. Then right after we got married, he applied for a couple of grants and started a little production company. In a couple of years, he had his first album.”

Marketing the album meant calling on radio stations and stores one at a time. When he came home, she’d ask how it went. “He’d say,

they said no but that’s OK,” she said. “No matter what the situation, it was OK. He’d say, I got 10 nos but one yes. He’d have only five concert dates, but five were better than none. Seldom have I seen him defeated.”

But it was his compassion more than his optimism that first captured her heart. Throughout college, she knew every date would include a phone call or a visit with Dashiell’s grandmother. He was always checking in to see if she needed anything. “He had so much love and respect for older people,” she said. “Now if he sees an elderly person on the street, he’ll stop and get out of the car to help or take them home.”

Rhonda’s father lived with the Dashiells for a few months before his death from Alzheimer’s disease, and she said it was Carroll more than anyone else who continued to have the patience to listen to the old gentleman’s stories and tolerate the changing moods. “He saw there was still a good man in there,” Rhonda said.

At times Carroll may wish his own children could see the good man inside. “Right now daddy’s stupid,” he said. “He doesn’t know anything. They’re finding their own identity.”

At least on the surface, that could be difficult. The two boys — Carroll Vaughn III, 17, and Christian Valone, 12 — share Dashiell’s initials. The girls’ initials — Cameron Nanine, 18, and Christie Nichol, 14 — vary by only a pen stroke. “Rhonda says she was crazy to let me do that,” Carroll said.

Rhonda said her husband struggles with the children’s growing independence. “He still wants the whole family doing things together,” she said. “Even if we go to the grocery store, he wants to take all four. Maybe that’s because he feels he spent so much time away while they were little. I can’t imagine five or six years from now when they’re all out of the nest.”

For now, all six family members play or sing with different choirs at Sycamore Hills Baptist Church, and the four children are active in the church youth program. When one child has a basketball or football game, a theater performance or a recital, the whole family attends. Dashiell will shoot hoops with the boys and acts as an unofficial assistant coach for Christian’s recreational league basketball team.



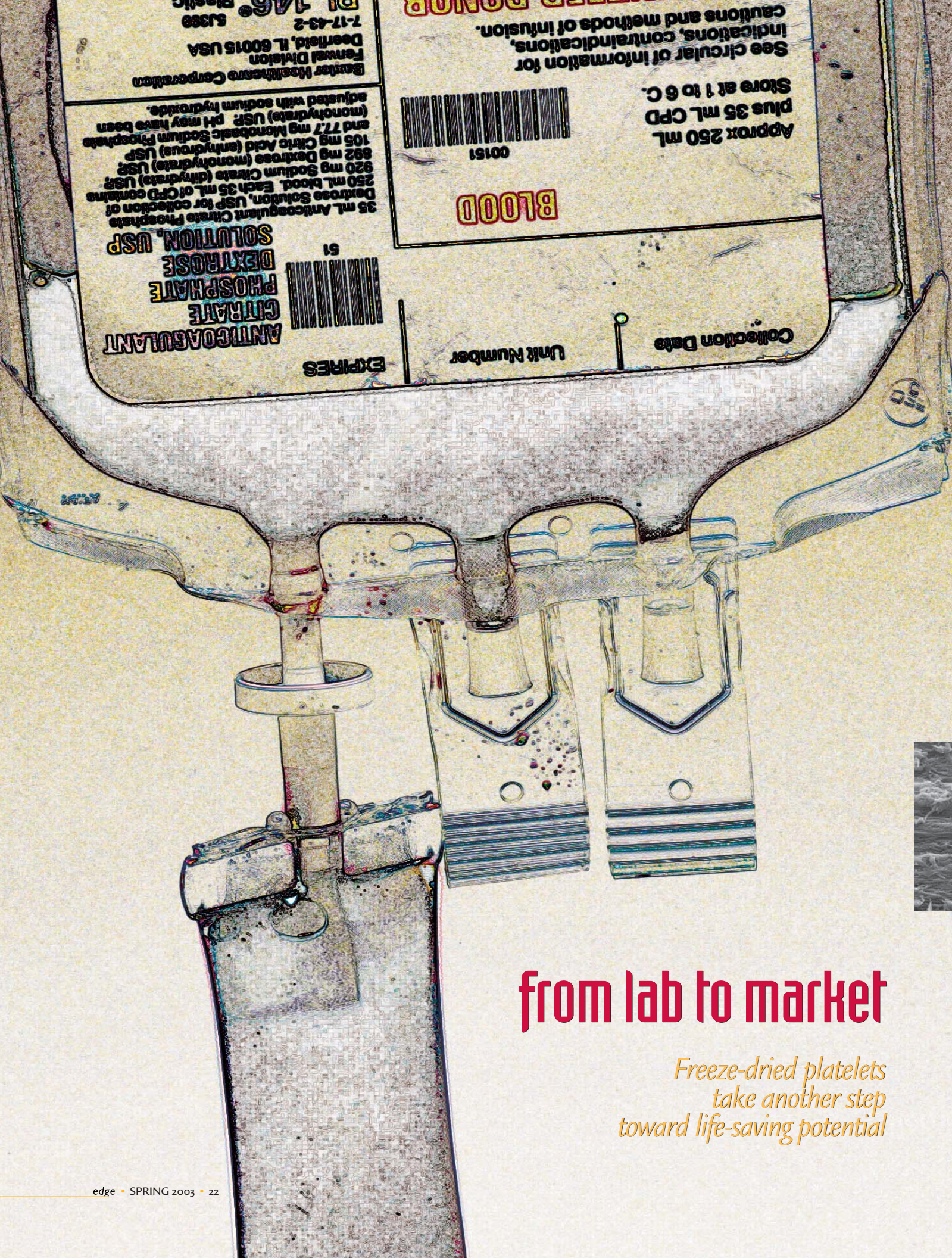
Though he seldom tours now, Dashiell finds joy in “constantly trying to progress.”

He helps out his favorite football team from a brown recliner in the den. The family gives him wide berth whenever the Redskins are playing. “I’m a Redskins nut,” he said. “I talk about ‘em, fuss at ‘em, but I love ‘em to death.”

At other times, he slips back into his home studio to practice, to write, to ponder. With teaching, directing, performing, recording and an active family, it takes Carroll and Rhonda both to keep his schedule straight. “I’ve always said Carroll was a little complicated,” Rhonda said. “He likes to do several things at one time and he likes to do them all well. He’s such a driven person and a passionate person. It keeps him going.”

Where it will all lead, the big man isn’t sure. He takes it all a note at a time.

“I’m just trying to find that B flat,” he said. •



from lab to market

*Freeze-dried platelets
take another step
toward life-saving potential*

Books and papers spill over the desk and across the room. It is an office typical of many a research scientist. But as the computer screensaver beeps and purrs, strange sounds come forth from Dr. Arthur P. Bode, professor of pathology at ECU. Phrases like “product target profile,” “vertically integrated business plan” and “high-end supply.”

In another year or two, Bode may not flinch. Now, he shakes his head and laughs. “I can’t believe I’m saying this.”

Mixed with the disbelief bubbles an excitement borne of knowing that a potentially life-saving technology he developed with researchers at UNC-Chapel Hill is poised to move into clinical trials within two years. If all goes well, freeze-dried blood platelets with the ability to quickly stop bleeding in severely injured patients may hit the marketplace before the end of 2008.

Bode and his colleagues in the newly formed Hemocellular Therapeutics Inc. see a huge potential market: accident victims, surgery patients, cancer patients, soldiers wounded in combat, shooting and knifing victims. Anywhere there’s active bleeding with significant blood loss, they believe their product provides a solution not available today.

bleeding. They can be stored safely for up to five years, compared with five days for blood-bank platelets. And the freeze-drying process appears to kill all potential bacterial and viral contaminants.

As if the medical implications weren’t sufficient, company officials point to the economic benefits for eastern North Carolina. They plan to build their manufacturing plant in Greenville and predict an annual payroll of \$15 million and sales exceeding \$1 billion in three to five years after start up.

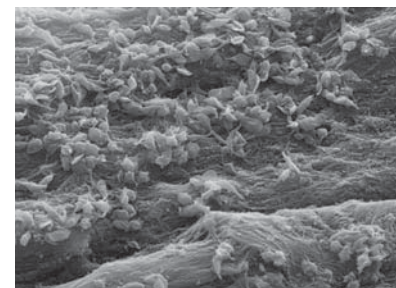
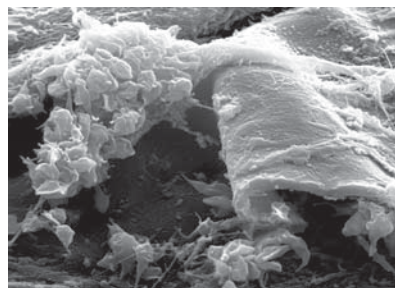
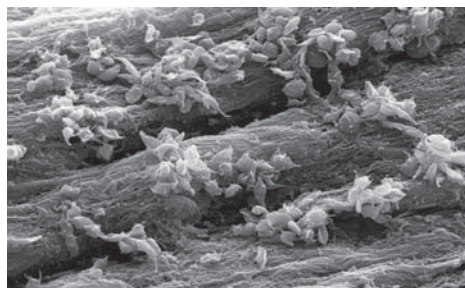
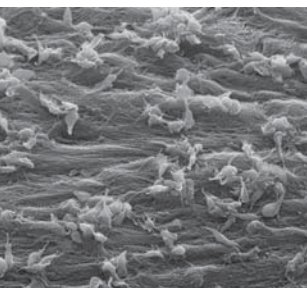
Perhaps Bode can be excused the occasional expression of bemusement. The sense of urgency that now drives the start-up company follows years of patient research that has been beset by roadblocks and blessed by serendipity. At its center sits a vial of white powder that looks no more glamorous than a handful of Epsom salts.

The first seeds for Hemocellular were planted 20 years ago at UNC-CH where the pathology department was headed by a man Bode calls “one of the godfathers of coagulation and platelet science,” the late Dr. Kenneth Brinkhous. In the early 1960s, Brinkhous had developed a diagnostic test for the common bleeding disorder called von Willebrands

“No one thought of using that freeze-drying for any other use except diagnostic testing,” said Bode, who first heard about Brinkhous and Read’s process as a doctoral student in Chapel Hill. By 1986, Bode had moved to ECU and was directing research to prolong the shelf life of fresh platelets held in blood banks. That research came to a screeching halt when the Food and Drug Administration declared that it would not allow platelets, which must be stored at room temperature, to be kept for more than five days because of potential bacterial growth.

With the FDA announcement, Bode’s funding evaporated. How was he to keep his lab going? Looking for a new avenue of research, he talked with Cmdr. Lyn Yaffe in the Office of Naval Research.

“He said if you guys could ever learn how to freeze dry those cells, we’d be in business,” Bode recalled. “Lo and behold, the connection is made. I went running back to Dr. Brinkhous. I said you guys freeze dry your platelets, don’t you? He said yes, of course. I said, well, have you ever thought about putting those back into a human being and see if they stop bleeding? I can’t believe I surprised somebody who was one of the



Research indicates that freeze-dried blood platelets are more effective than blood-bank platelets in stopping bleeding. Here, photos taken with a scanning electron microscope show freeze-dried platelets sticking to the surfaces of an injured blood vessel.

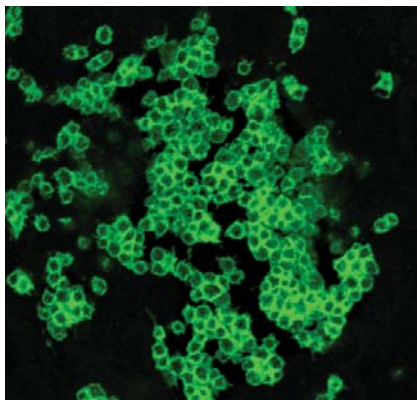
“It’s a large market and a market currently served by a standard of care that doesn’t work,” said Richard Basile, a former Bayer executive hired as Hemocellular’s CEO. In laboratory and animal tests, Hemocellular’s freeze-dried platelets respond faster and more efficiently than blood-bank platelets to stop

disease. The test used platelets, and given how frequently it was performed, it used a lot of platelets. To eliminate the need for a constant supply of fresh platelets, Brinkhous and his associate, Dr. Marjorie S. Read, developed a simple process for freeze-drying platelets and obtained a patent on it in the early 1980s.

top three people in this field, but he just looked at me and said no, we never thought of that. So he and Marjorie Read and I sat down and had a good discussion.”

For the military, freeze-dried platelets represented the potential to keep soldiers and

Continued



LEFT: From left to right, Arthur Bode and research staffers Richard Hodges, Martina Bainbridge and Cheryl Binkley continue to refine freeze-drying techniques for platelets. CENTER: Fluorescent antibodies illuminate freeze-dried platelets that have been reconstituted in a saline solution. RIGHT: For Bode, 10 years of research led to the creation of Hemocellular Therapeutics Inc.

sailors from bleeding to death in the midst of battle. Platelets have several properties, the most critical being their role as the body's first responder to injury. When they sense a wound, they stick to it and promote coagulation. Without platelets, chances of stopping severe bleeding are slim. Yet platelets have been missing in action from the battlefield.

Currently, blood is separated into three products for blood banking. Plasma, the fluid part, can be freeze dried and stored for years. Red cells, which carry oxygen, can be kept refrigerated for seven weeks. Refrigerated platelets, on the other hand, refuse to recirculate. At room temperature, the short shelf life of platelets renders them useless for military field operations. Even in domestic settings, maintaining supplies can be difficult. Sometimes supplies run short, but overall, blood banks discard 20 percent of platelets unused when they pass the expiration date. Clearly, freeze-dried platelets — easy to store and transport — would be a major benefit.

Previous attempts to produce freeze-dried platelets for transfusion dated back to the 1950s. None had succeeded. Nor was Brinkhous and Read's process, while adequate for diagnostics, suitable for this purpose. It was far too harsh. To maintain their clotting property, platelets had to retain their delicate sponge-like texture and the surface "whiskers" that locate and cling to wounds. But it did present a foundation for new investigations.

With funding from the Navy, Bode and

Read took on the challenge. One after another, they tried different fixatives and treatments — microwaving, air-drying, freeze-drying, a lot of "kitchen chemistry," as Bode described it. "It took about four years to get to where we could very nicely, with fine tuning, get the platelets fixed so that we rigidified their surface no more than you had to, to be able to freeze-dry them and still have a fairly active cell once you added the water back."

Eventually, tests would show that freeze-drying, or lyophilization, not only preserves the platelets' clotting properties, but enhances them. When transfused, blood-bank platelets can take up to 24 hours to regain full function. Freeze-dried platelets, reconstituted in a saline solution, instantly go to work to stop bleeding. So far, they also have shown no deterioration from being stored up to five years. The only apparent use for which blood-bank platelets remain superior is as preventive therapy. If you're trying to fortify patients' blood so they won't start bleeding, blood-bank platelets are preferable. But if they're already bleeding, freeze-dried platelets promise a better solution.

By the mid 1990s, things were going well. UNC and ECU jointly patented the process and licensed it to a company called Centeon, which already produced freeze-dried plasma. The Navy continued to fund both the universities and Centeon. Though the relationship between the researchers and company became strained at times, they made progress on refining the process. Clinical trials,

necessary to prove safety and efficacy, appeared to be only a couple of years away. Then a problem with an unrelated Centeon product ricocheted, affecting other operations. The company withdrew from the project and returned the remaining grant money to the Navy.

Bode and Read persevered and formed a tentative partnership with the Red Cross as a step toward clinical trials. The Navy reduced its funding because of accounting problems at the universities in showing the rate of expenditures. The researchers rewrote their timeline accordingly. Then came what appeared to be the crushing blow. Concerned that without Centeon, the product would never reach the marketplace, the Navy halted funding.

"Quite literally, we were within a couple of months of doing a critical study that would have established us as a viable entity for producing something they desperately needed," Bode said, "and it vaporized right before our eyes."

Nonetheless, one fortuitous development came from the Centeon relationship. Company officials had questioned what effect the freeze-drying process had on viruses. They had recognized what the researchers initially did not: the growing concern about the transmission of viral diseases through blood products. Soon, tests confirmed they had a product that not only fixed platelets but also sterilized them.

"That's the real kicker," Bode said. "This

same process kills, so far as we know, all viruses and all bacteria that you can load into a platelet suspension. That means it kills the hepatitis virus. That's a terrible risk for transfusion medicine. It kills HIV. It kills the viruses that we put in there just as models of what viruses look like. So most likely, this process is going to sterilize against everything. We can't prove that, but for all the test viruses that have been tried, they show a total kill. No virus survived."

The two years after Centeon pulled out dragged. Eventually, UNC-CH, which had taken the lead on technology transfer, recovered the license. Read retired. Into her place stepped another UNC-CH scientist, Dr. Tom Fischer, but no new corporate suitor came forward with an interest in commercializing freeze-dried platelets. "It became apparent to us that to get this off the ground and get it to clinical trials, we would have to do it ourselves," Fischer said.

Bode demurred. "Actually, he (Fischer) is the guy who jumped into the business end of this and pulled me in with him," he said. Fischer enrolled in a class offered by the UNC-CH Kenan-Flagler School of Business. Targeted to university researchers, the course walked him through the fundamentals of how to launch a new company. With Bode's help, he did the market research and put together a business plan.

Each student in Fischer's class presented his plan to a group of business, finance and legal experts the school had gathered to provide feedback. Sitting in that audience was E.S. "Stan" Eskridge, an entrepreneur with a long history with business startups. He had launched his first business in the late 1970s. Called the Aviation Group, it became the overnight air force for United Parcel Service. When Fischer made his presentation, Eskridge liked what he heard.

"I had an instinctive reaction to Tom and the technology, and of things in that course, it looked to me like this had the shortest path to revenue," he said.

They talked outside class, then met with Bode. "Fischer and Bode are both outstanding as scientists and good people," Eskridge said. "I was convinced this particular transaction

had the potential to become a poster child for how we in business, government and universities could work together."

Eskridge took over the nuts and bolts of forming the new corporation, honing the business plan and contacting venture capital groups that might be interested in investing in the new enterprise. He also sought expertise in bio-pharmaceutical development, manufacturing and marketing — a route that led him to Dick Basile.

Basile brought with him a 28-year career in the industry. He had been a senior executive with Bayer, concluding as a manager of its global biologicals unit, and had served as executive vice president of Bertek, a company specializing in cardiovascular and central nervous system therapies. He reviewed the platelet science, analyzed the potential market and looked at the competition. Two other groups are known to be investigating different processes for freeze-drying platelets. Neither has achieved a similar level of success. Basile signed on.

Three significant challenges lie ahead for Hemocellular. One is proving the technology. Freeze-dried platelets have yet to be tried in humans. They must be shown to be both safe and effective. Basile said he is confident the federal regulatory process will move quickly and smoothly. "We're taking this from a superb body of preclinical research," he said. "There's already 10 years and \$10 million in academic research backing us up."

The first clinical trials, Bode said, will likely involve open-heart surgery. "Open-heart surgery patients bleed a lot," he said. "About 15 percent will bleed to the point where they're in danger of bleeding to death. We think that if you infused our products, you'd stop the blood loss and avoid shock. (Patients) will get off the table sooner and recover faster. There'll be less stress on the body."

Because open-heart procedures are so carefully controlled, he said, they will provide an ideal test. Never far from his mind, however, is the dire need that first launched the research.

"We're about to go to war," he said. "I've got a 19-year-old son so I think about this. Will we be able to stop death from exsanguination

on the battlefield? Right now, they can only put in plasma, which will increase blood pressure and cause further bleeding. It keeps the brain alive, but you bleed out. Put in our stuff, and you save a life."

Hemocellular, which will license the technology from the universities, already is soliciting proposals from clinical research organizations to assist in running multi-center medical trials. Proposals also are being sought from bioengineering companies for the second challenge: transforming laboratory processes into full-scale manufacturing that meets regulatory standards.

Securing capital presents the third major challenge. The business plan calls for a vertically integrated company — a phrase once foreign to Bode — that will take the product from development through manufacturing, marketing and sales. It could take \$5 million to get through the first phase of clinical trials and 10 times that to be ready to produce the first commercial vial.

"The timing is not good," Eskridge said, referring to the economic slowdown that has reduced the available supply of venture capital. "If this deal weren't as unique as it is we wouldn't have a chance."

In his paper-strewn office, Bode talks about business cycles and ponders past and future. He plans to request a one-year leave from teaching to devote more time to Hemocellular's product development. When he chose to pursue freeze-dried platelets, he says, he made a career decision that moved him away from publication-driven, academic research in favor of practical, results-oriented solutions. The molecular tools that win federal grants have passed him by. It was a risk and a sacrifice, he says, but the experience has been fulfilling, even if sometimes overwhelming.

"Graduate school doesn't prepare one for this," he says. "I'd hate to take a business graduate and put him in a science lab and say work. But by the same token, don't take a scientist and put him in the business world and say work, not unless he totally retrain his mind." •

AN ECONOMIC EARTHQUAKE

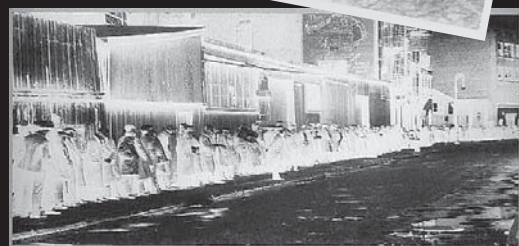
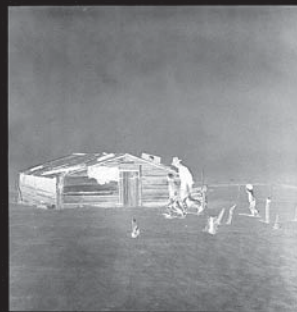
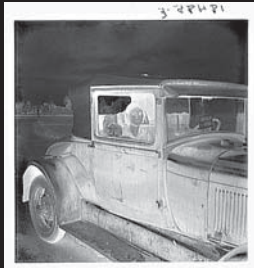
Professor revisits the Great Depression through interviews with top economists who experienced it

The Great Depression shook the world unlike any economic event before or after. The United States was no exception. Here industrial production shriveled to less than half its former strength. The money supply shrank by a third, prices fell, banks failed, and one person in four was unemployed. Average citizens were caught in a web of despair they could neither understand nor escape. When it was finally over, "never again" became as strong a rallying cry about the Depression as for any war.

Today the cruel realities of that period, 1929-1941, are rapidly fading from the collective memory. In a new book, Dr. Randall E. Parker, associate professor of economics, ensures that some of its most important memories will not be forgotten. Reflections on the Great Depression (Edward Elgar Publishing Limited, 2002) contains interviews with 11 of the 20th century's greatest economists, including four Nobel laureates. Belonging to the generation that came of age between World Wars I and II, these individuals lived through the Depression. Their lives and philosophies were in some way shaped by it, and they in turn have influenced economic policy to the present day.

Advancing years had done little to dull the intellect or wit of these minds, Parker said. He found Albert Hart, then in his late 80s, surrounded by stacks of economic papers and journals. "The pages had just been turned," Parker said. "They weren't sitting there with dust on them. And he was ready to talk." Hart died six weeks later, showing how fragile is the link to that period. Others included in the book are Paul Samuelson, Milton Friedman, Moses Abramovitz, Charles Kindleberger, Anna Schwartz, James Tobin, Wassily Leontief, Morris Adelman, Herbert Stein, and Victor Zarnowitz.

edge talked with Parker about his book and the period and people who inspired it.



edge: What is important about continuing to study the Great Depression?

Parker: Trying to come to some consensus in the economics profession about what the causes of the Great Depression were and understanding how they worked is important, not only in trying to understand history, but to make sure we don't let it happen again. That was a pretty miserable and pitiful time in the world. It was worldwide, it was persistent, it was lasting, and its repetition isn't all that appealing. Also, think of it like this. Seismologists learn more about plate tectonics from one really major earthquake than they do from scores of little tremors. In terms of understanding economic activity in the business cycle and deepening our understanding of how economic forces operate in the world, the Great Depression is this major earthquake, and people who study the business cycle and economic history can learn more about how the economy operates from this particular episode than they can from several small recessions.

edge: Where did you begin your own studies of the era?

Parker: In pursuing my research agenda early in my career here at ECU, I was familiar with the literature on the Great Depression. I was taken aback by several things, two in particular. There was a number of different policies and economic occurrences and behaviors of prices and quantities during the Great Depression that remained unexplained in the mid 1980s, and I knew with a little intellectual energy that there were some potentially fruitful topics in which to publish original research and try to build my career as an assistant professor. Secondly, the more I read the literature, the more I realized in the mid 1980s that the economics profession had ceased to advance our understanding of the Great Depression. The literature had evolved into a standoff between individuals who insisted on the exclusive correctness of their so-called pet theory or monocausal explanation for the Great Depression.



People were saying look, this is what caused the Great Depression, this is what made it as bad as it was, it's only this one thing, and if you disagree with me, then you're an idiot.

I thought, well, I may be an idiot, but there's got to be more of a story than that. So I set out with my colleague Jim Fackler at the University of Kentucky to put this idea to a test. We wrote a paper that was published in 1994 in the *Journal of Macroeconomics* where we took every monocausal explanation, and we had an econometric horse race using statistical modeling. We thought that if a monocausal explanation was going to account for the Great Depression, then it ought to be able to empirically account for not only the depth of the Great Depression, but it should be able to mimic the characteristic phases of the business cycle in a statistically significant sense. So we pitted all these monocausal explanations against one another and had a horse race. None of them by themselves could either account for the depth, nor the length, nor the characteristic phases of the Great Depression. It took some combination of all of them to be able to empirically account for the depth of the Depression and its persistence. Our point was, everyone is stuck on zero because you're insisting on your exclusive correctness. We need to move on. We need to look at something different because nobody has a monopoly on the truth.

edge: How did you come up with the concept of interviewing the economists who had lived through the Depression as a way of studying the period?

Parker: My father was a child of the Depression. The lessons that he taught me in life were always punctuated with what happened to him and his family and the misery of the time. I got the idea that perhaps there was a story to be told about how the Great Depression had an impact on shaping the greatest economists of the 20th century.

edge: Let's look at the initial question you started with. Could you show consistency across them in terms of the personal

impact the Depression had on them and their economics, or were the two things separate?

Parker: No, they're not separate. Milton Friedman said he got into being an economist because of the Depression, which was going on when he was in graduate school. Had there not been a Great Depression, he probably would have been a mathematician. Paul Samuelson told me you had to consciously free yourself from the grasp of the Great Depression. The deprivation and want, and how unnecessary it was, is not something that's going to leave you very easily. Those people who came from well-to-do families, who were able to make it through the Depression without missing a meal or knowing deprivation, the Depression didn't have as much of an impact on them, but when they came out of the Depression, they were much more socially conscious. So your experience of the Great Depression, no matter how you come down in economics, is like a song you can never quite get out of your head.

One result was a complete switch in the way that the public viewed the role of government. Before the Great Depression, the public's perception was more Jeffersonian, where the government was a necessary evil and at the same time should be limited in scope and shouldn't interfere with private business and people's lives. (Afterward) it was *demand*ed that the government play a role in the economic affairs of people's lives. Not that it was a necessary evil, but that it was demanded and the people required that the government play a role.

edge: Do I remember correctly that Milton Friedman said with respect to that point, that we learned the wrong lesson from the Great Depression?

Parker: That's correct. It wasn't the corporate world or business that let people



Continued

down in the Great Depression. It was the government that let them down. I do not disagree with that. But it's hard to look at somebody who's in need of a meal and turn your back on him. That just was not going to be done any more after the Great Depression.



edge: I was amazed reading this to see, as you had earlier, how divergent the views remain about what caused the depth and length of the Depression, 60 years after the fact.

Parker: Yes, the debate still goes on today, and I don't think it will ever be settled. How do I put this? (Pause and laugh.) People have positions to defend. People have ideas that they want to support, and I don't think there's any finite amount of evidence that will ever persuade them differently. Certainly, the people who were in my book and who won the Nobel Prize didn't do so because they were easily bent toward someone else's persuasion, and I've been told that as you become older, you become more obstinate, not that I know anything about that, you understand, but I've heard that.

In Herbert Hoover's memoirs, he insists that if he would have been re-elected, the economy would have turned around sooner than it did under Roosevelt and that if Roosevelt would have continued to follow his policies, the Depression wouldn't have been as deep as it was and would have recovered much more quickly. How could you be that stupid? If only we were more financially austere, if only we would stick to the classic principles of international finance, if only we would have more bankruptcies, more liquidations and more economic austerity, if we could just stay the course for a little while longer, then magically things are going to turn around. That was the Hoover administration. In hindsight, it's hard to describe a worse policy prescription than that.

Couldn't the government have done something different? You bet. And particularly the Federal Reserve, could they have changed their behavior and done something differently to stop the Depression from happening? That's where the debate is. Did



"Your experience of the Great Depression, no matter how you come down in economics, is like a song you can never quite get out of your head," says Randall Parker.

the gold standard give our monetary authority the ability to expand the money supply independently of other countries? Some say yes; some say no. Should the Federal Reserve have been called upon and expected to increase the supply of money by far greater percentages than they had ever done since their creation in 1913? Could it have been reasonably expected that they would do that? Some say yes; others say no.

So we get to this debate. Why is it that the Federal Reserve was ostensibly like a deer caught in the headlights? They were created to be the lender of last resort. Their whole raison d'être was to come in and lend to banks in financial trouble when no one else would, to prevent the money supply from collapsing and becoming an economic problem. They were either unwilling or unable to do that in the Great Depression, and that's the single greatest cause, letting the money supply fall by over one-third was the single greatest cause. People say the gold standard didn't permit them do anything differently. Well, suspend the gold standard. This was not unknown behavior. They did it in World War I, they did it in other times,

but when it came to the Great Depression, they were like a deer caught in the headlights. They didn't do it. Did the Federal Reserve understand what was going on with the money supply and how to prevent it? Yeah, this is easy. This is not difficult to understand when you have deposits in a bank being converted into currency and held as cash. A dollar in a person's pocket does not have the same financial consequences as a dollar in a checking deposit account. A dollar in a checking deposit account is much more powerful for the creation of money than is a dollar in currency. The Federal Reserve understood what was going on and did nothing about it. So behaviors that they had exhibited in the past in knowing what to do in crises apparently fled from their minds when it came time to exercise it. Why that happened will be debated from here to eternity, and I don't think we'll ever know the answer.

edge: Are there not the records that allow you to go back and understand their decision making?

Parker: Yeah, there are, but we had a



problem. We had a committee. We had a committee that had been put together right after the death of a very strong leader of the Federal Reserve of New York, a guy by the name of Benjamin Strong. When he died, it threw the leadership of the Fed basically into turmoil. Milton Friedman has said that a committee is a jocular phrase for a group of people, none of whom know what should be done who jointly decide that nothing can be done. That's in his book with Anna Schwartz, *A Monetary History of the United States*. And that's what we had. Six people on a committee who understood what was going on and another six who, even though the economy was burning to hell and the unemployment rate topped 25 percent, were still cautioning that any type of action to stop this will ultimately lead to the next inflation, and oh, horror of horrors. Well, what the economic research has shown is that's exactly what we should have had to stop the deflation that was going on. It's very clear from economic history and the research that's been done, the greatest single reason we've had economic instability in the 20th century was instability in the price level. Both inflation and deflation are not something that have very sanguine economic consequences. Yet half of this committee didn't think anything about it. They thought deflation was, believe it or not, penitence for the excesses of the 1920s. You just have to go through it. You have to have a bloodletting, like George Washington and his barber,

until all this disease can be bled out of you. Then we can start all over. So you've got the jackass halfway between the bag of oats and the bale of hay. He starved to death because he couldn't decide which one he wanted. Thus you have the position of the Federal Reserve during the Great Depression.

edge: But they weren't the ones who starved to death.

Parker: Touché. They weren't the ones who starved to death.

Now, England finally had enough. In September of 1931, they said we can't take it

any more. They left the gold standard and began to recover immediately. When Roosevelt took office, he finally had enough of it, too, and said we're off the gold standard, and we started to recover. So economic research on the Great Depression shows, if there's any empirical regularity, it's if you left the gold standard, you instantly began to recover because that punishing downward, deflationary death spiral was only alleviated when you left the gold standard. The quicker you left the gold standard, the quicker recovery came. France and Belgium stayed on the gold standard until 1936, and they did not begin to recover until they left. Spain, which was never on the gold standard, missed the Great Depression altogether. It was more than just historical coincidence.

edge: Yet we didn't pull out of it altogether until World War II.

Parker: It took a long time. When (the Japanese bombed) Pearl Harbor, the unemployment rate was still 15 percent. So it took eight years or so even to lower it down from 25 percent to 15 percent, and 15 percent was still massively high. So then the war came along, and I don't think you can separate the total ending of the Great Depression with our involvement in the Second World War. The unemployment rate quickly went below 2 percent after that. Now don't associate me with saying a war is a good thing for the economy. I would never say that, and I think it's absurd that people do. It's a ridiculous notion. Having said that, however, World War II ended the Great Depression. As soon as the Second World War was over, people were scared. They thought we were going back into the Great Depression.

edge: Was it all that pent-up demand that kept the economy going?

Parker: Correct. The build up of want. The build up of liquidity. People didn't have anything to spend their money on (during the war). So when the time came to buy consumer goods, they were ready. Economists at the time didn't anticipate this kind of reaction.

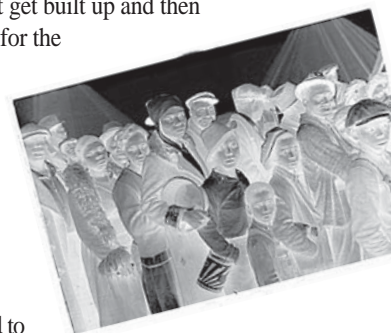
edge: Among the things you talked with these economists about were the lessons learned and whether we would ever have a similar depression. Usually they said, it's unlikely to be exactly the same, but —. What were the butts that sounded most important to you?

Parker: Well, the butts are that the economy may have structural changes that we can't right now anticipate, that we can't forecast or understand right now. This is the point made by Moses Abramovitz that struck me the most.

I'll give you an example of what I mean although it's a very minor thing. The information age and just-in-time inventory accounting is changing the nature of the business cycle before our very eyes. Recessions are becoming much more shallow and shorter, and economic recoveries are becoming much more sluggish and prolonged than they have been heretofore. How come? Because firms don't have the same type of inventory behavior that they have had throughout the 20th century any more. You don't have this big build up of inventories. They don't get built up and then have to be spent down for the economy to recover when a recession bottoms out. They know basically from day to day what their customers sell, what their customers' inventories are and therefore what they need to produce tomorrow.

Another example. The stock market appears to be more volatile with our service and idea economy than it was in the past when we had more brick-and-mortar industries. With brick-and-mortar industries, they have a product, they have a sales force, they have a forecasted cash flow, and it doesn't really matter much who operates the corporation. As long as you can produce these widgets and sell them, you have a projected cash flow. Financial markets are able to evaluate these and price the assets fairly and reasonably. So you don't get a lot

Continued



of fluctuation in the market price of corporations either way. Idea companies now, particularly those that are run by an individual — Bill Gates, for example, who started the company and is the idea guy behind it — now a lot of this firm's stock value is based on the reputation of the guy running it. Anything real or perceived that impugns the reputation of the individuals who run corporations such as these will have a great deal of impact on the stock prices of the corporations. So with Enron and WorldCom, whatever

they ultimately wind up being guilty of, there is a spillover effect to other corporations. That has added volatility to the financial market. We couldn't have anticipated this 10 years ago. And there may be changes in the economy in the future that will make us more susceptible to Great Depressions, as Moses Abramovitz pointed out.

I think Anna Schwartz said it best. We're not going to have another Great Depression in the same way and manner that we did in the past. In order to make the Great Depression happen again, you'd have to *make* it happen. You'd have to make so many policy mistakes and basically have a flawed international financial system like the gold standard in order to make it happen again. But could we have another Great Depression? You can't say no, but it is very unlikely and if it happens it will not be of the same nature of the Depression of the 1930s. (On the other hand) given how the Japanese have been behaving for the last 10 years, it makes me wobbly on this point. It shakes my confidence in what I just said.

edge: When you conducted your interviews, the economy was still in excellent shape. Employment levels were high, and stock prices were soaring. Things have changed pretty drastically since then. Was this experience the kind of bubble that Friedman was cautioning about?

Parker: What we saw was a speculative bubble in the stock market. That's exactly the kind of bubble they talked about.

We had a feeding frenzy in technology stocks. Amazon-dot-com traded at one point for over \$400 a share and never had a single dollar in profit made. If that's not buying swampland in Florida like the Florida land crazes, I don't know what was. Bubbles go up. Well, ultimately something popped. When it popped in March of 2001, we were in the beginning of a recession, and that didn't help. We're still feeling the effects of that now because what's driving the economy is the dearth of investments by corporations, particularly in equipment. Now I don't like to use this word, but I will — they "overspent" in information technology. There's a glut of information technology we're going to have get through, I think, before the economy is going to vigorously recover. The stock market was definitely in a classic speculative bubble, as some people think is now happening in real estate. I hope not, but there's some evidence to make us worry. You have to remember that although we might not have another Great Depression, we still have a business cycle. It goes up and it goes down, and what we're going through right now is one of the classic phases of the business cycle.

edge: There were some really interesting tidbits that came out in your interviews. I was fascinated that some of these people, as graduate students and young professors, managed to get galley proofs of John Maynard Keynes' books before they were published. What were some of the tidbits, either in personality or facts, aside from great economic thoughts, that just tickled you to find out?

Parker: I guess as Ben Bernanke said in the foreword he wrote for it, that it was just some of the highbrow gossip, some of the interactions that some of the great thinkers have had with one another. These guys, most of them but not all of them, were kind of playful. They were great intellects and great minds, but they were also witty. Being able to banter back and forth to them a little bit was really a lot of fun, and it isn't every day you get to talk to a Nobel Prize winner.

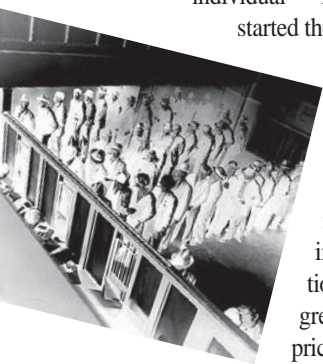
The other thing, as I said in the introduction to his interview, Victor

Zarnowitz absolutely blew me away. I still get goose bumps just talking about it. His life during the Great Depression continues to humble me, and the world is a better place with people like Victor Zarnowitz around.

edge: Remind me of his story.

Parker: I started asking standard questions, where were you born, which university did you go to. He says, I was born in a little town called Lancut and then we moved to Oswiecim, which is better known as Auschwitz. Then the Germans invaded Poland and we were running from them, and then we ran to the Russians, and they put us in the labor camps. My family was destroyed in the Second World War. My brother died in the Russian labor camp. That started the interview. And, how do I say this, if you had just hit me in the stomach with a baseball bat and knocked all the air out of me, I'd have been in the same shape. Now we had a wonderful conversation, and I still talk to Victor today. He always has time for me, and I was just so humbled and so blown away with the first part of the interview and what he had to say about living in Auschwitz and the Russian labor camp, and it wasn't until the McCarran Act was repealed in the 1950s that he was even allowed to come to the United States. It still has an impact on me today. And a kinder, gentler, nicer man you couldn't hope to meet in the whole world.

Going back, let me make this point if you will, going back to asking why study the Great Depression, what can you learn from it, I don't think you can separate the Great Depression from World War II. I'm not into monocausal explanations, and I never will be. But part of the responsibility for the Second World War can be laid at the doorstep of the Great Depression. You can't separate the rise of Adolf Hitler from the Great Depression in Germany. Germany suffered the worst of all the industrialized nations. I'm afraid that probably laid fertile ground for Nazism to take root and sprout in Germany. OK, let's do a counter-factual question. No Great Depression, no Nazi Party? I don't have the answer to that, but maybe not. And then maybe you would have a different history in the 20th century. •



BOOSTER SHOT

VACCINES WITH IMMUNE SYSTEM ENHANCER
GIVE BETTER PROTECTION

Developments in creating an effective HIV vaccine are showing promise in the fight against some of the world's other deadliest diseases, including potential biological weapons.

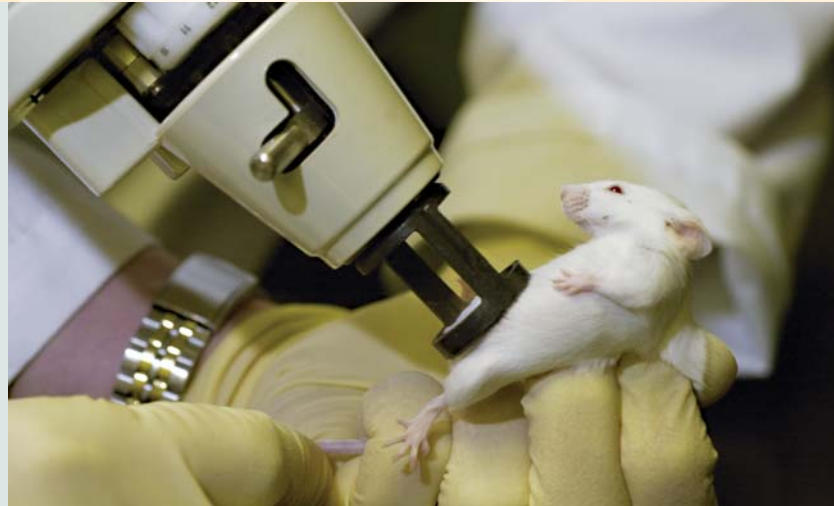
Since 1997 Dr. Ted M. Ross has been working with an immune system enhancer, or adjuvant, to increase the effectiveness of experimental DNA-based vaccines against HIV, the human immunodeficiency virus that causes AIDS. Traditional means of making vaccines are either too dangerous to use with HIV, because they use live pathogens, or fail to produce adequate protection against disease. Research now focuses on a DNA vaccine, which uses a single gene or genes — not a whole, infectious particle — to stimulate the production of both antibodies and protective “killer” cells. Results have been encouraging, and Ross seeks to improve on them by increasing the immune response to the vaccine. He is focused on “priming” the immune system — specifically the C3d molecule — to recognize and respond to the vaccine. Laboratory tests show his technique heightens the immune response as much as 10,000 fold.

“This means you don’t need as many booster shots, and in some cases only one vaccination creates immunity,” said Ross, assistant professor of microbiology and immunology at the Brody School of Medicine. “This is important for worldwide use because it’s often hard to get patients to follow-up.”

Although concentrating on HIV, Ross saw broader applications, including the influenza vaccine. Current flu vaccines, which are created with an inactive virus, are effective in only about 70 percent of patients who receive them, he said. They are particularly ineffective in the elderly, whose immune systems are weaker.

Ross tested his hypothesis by creating a flu vaccine with his enhancer and comparing its effectiveness in preventing disease against that of a traditional vaccine. Mice were divided into three groups that received either his vaccine, the traditional vaccine or no vaccination. All of the vaccinated mice registered some immune response, but significant differences showed up when he exposed the mice to an especially strong strain of the flu. None of the mice that received Ross’s vaccine became ill. All of the others did, and 75 percent died.

As laboratory testing continues with the HIV and flu vaccines, Ross is working to apply the technique to DNA vaccines against malaria, measles, smallpox and other diseases. “Some of the most intriguing uses could be in biodefense,” he said. “We think this technology will be good for that. We may one day need a fast, cheap way to produce vaccines for pathogens we don’t even know about



In Ted Ross's lab, Tom Green (left), senior research technician, and Joe Bower, post-doctoral fellow, inoculate mice with a DNA vaccine. Ross is investigating ways to boost the effectiveness of the vaccines.

today.” One project in conjunction with the Army Medical Infectious Disease Unit is working on a vaccine against Ebola, an especially virulent disease that causes hemorrhaging throughout the body and kills a large majority of those infected.

Ross has received funding from the National Institutes of Health and ADPROTECH, a biotechnology company based in England. He also has research partners in Raleigh and California.

The technology remains at the experimental stage, but Ross sees great potential. Unlike traditional hypodermic vaccines, DNA vaccines do not require refrigeration, and hundreds can be loaded into a small device for fast mass inoculations. Just as important, he said, DNA vaccines may help prevent or slow the spread of diseases like HIV in which other approaches offer little hope. •

AN EARLY WARNING

NEW METHODS MAY IMPROVE
DETECTION OF BREAST CANCER'S SPREAD

A less-invasive procedure to detect the spread of breast cancer has rapidly gained acceptance, thanks in large part to researchers from the Brody School of Medicine. "This has been incredibly fast for a clinical procedure," said Dr. Kathryn Verbanac, one of the lead investigators studying sentinel node biopsy. "In 1996, it was still an experimental procedure. Now it's state-of-the-art."

Today, the research team continues to refine techniques for sentinel node biopsy and to seek other early detection systems for metastatic disease. Preliminary results indicate that a simple blood test may one day play a role in improving breast cancer survival.

Led by Verbanac, a biochemist and associate professor of surgery, and Dr. Lorraine Tafra, a surgeon now at Anne Arundel Medical Center in Annapolis, Md., ECU researchers homed in on sentinel node biopsy as a way to lessen the trauma for tens of thousands of women diagnosed with breast cancer each year. Previously, the initial surgery for breast cancer involved removing the tumor and up to 40 lymph nodes from under the arm. The lymph nodes, part of the immune system, were studied for evidence of whether the disease had spread to other parts of the body, indicating a need for additional treatment. The ECU researchers led a multi-center, national trial comparing this traditional procedure with sentinel node biopsy, which limits lymph node removal to the first one or two that drain the tissue surrounding the tumor.

With more than 1,000 patients in the study, the researchers concluded that sentinel node biopsy is just as accurate as the traditional procedure, and perhaps more so, for nearly all types of patients. The

trial, combined with others, has led the American Society of Breast Surgeons to issue a consensus statement saying sentinel node biopsy improves detection of metastatic disease when it is performed by an experienced surgeon. About 65 percent of breast cancer patients will show no spread of the disease and thus are spared further surgery. For them, sentinel node biopsy boils down to faster recovery and fewer complications.

By either procedure, however, negative results can be misleading. Currently, the first test in a biopsy involves staining thin slices of the lymph nodes and examining them for the indicative shape of a cancer cells. Negative nodes also are often subjected to a second test called immunohistochemistry. Even so, 25 to 30 percent of patients with negative biopsies will see their cancer recur.

As the initial trial of sentinel node biopsy proceeded, Verbanac launched a complementary study to determine whether more sensitive molecular tests could detect a higher percentage of metastatic cancers. Her laboratory first screened healthy and cancerous lymph nodes to identify chemical markers that could be clearly associated with the spread of cancer. It then used a technique called reverse-transcriptase polymerase chain reaction (RT-PCR) to



Kathryn Verbanac, standing, and Ann Mannie seek to improve the accuracy of testing for metastatic breast cancer.

amplify the markers, making the presence of even very small numbers of tumor cells more obvious.

Verbanac's team used the refined test to examine sentinel node biopsies from 300 patients in the original study and detected malignant cancer in 25 percent of patients with negative biopsies. "This is right in the percentage of those whose tumors recur," Verbanac said. Of the 18 patients whose cancer already had recurred, the new test found the marker in 11. In four of those cases, the metastasis was detected only through PCR.

Verbanac cautioned that the numbers are not large enough to draw definite conclusions about RT-PCR, but she's optimistic based on this interim analysis and on similar studies involving patients with

\$1.5 MILLION GRANT TO STUDY DRUG RESISTANCE

Two School of Medicine researchers have received a \$1.5 million, five-year grant to study resistance to chemotherapy drugs used to treat breast cancer. The National Institutes of Health and National Cancer Institute announced the award in February to Drs. James McCubrey and Richard Franklin of the department of microbiology and immunology.

"It's a significant problem, especially for breast cancer patients, that when you treat them with chemotherapy drugs, some of their cells will be resistant to the drugs that are designed to hinder the growth of the cancer," said McCubrey, the principal investigator. If this happens and the cancer spreads, which may not be apparent for five to 10 years, those drugs will no longer be effective.

McCubrey and Franklin will look specifically at the cellular reaction to the use of the chemotherapeutic drugs doxorubicin and paclitaxel. They also will examine how two genes closely related to hereditary breast cancer influence the cells' biochemical mechanisms. From these studies, they hope to provide physicians with information on the use of combinations of drugs to improve treatment of breast and other cancers, McCubrey said.

The study will involve evaluation of breast cancer cells donated to the Michigan Cancer Foundation for research. Joining ECU as consultants on the NIH study are researchers at the University of Texas M.D. Anderson Cancer Center in Houston, the University of Florida in Gainesville and New York Medical College in Valhalla, N.Y.

melanoma and colon cancer. Her lab is using a quantitative test to analyze all the patients in the study to determine whether it can establish a numerical value at which the presence of the marker cells should signal the need for aggressive therapy.

Even more exciting is yet another line of inquiry in which Verbanac's lab is developing a test to pick up on a key marker for breast cancer in the blood.

"The nice idea about sampling blood is that it's non-invasive," she said. This test also has more potential applications. It could be used to indicate the initial spread or the recurrence of disease, and it could help monitor patients already undergoing chemotherapy or radiation. "If a patient is on chemo and you start seeing cancer cells in the blood, you could potentially switch to a different type of therapy," Verbanac said. "The data are encouraging for both possibilities, but we are still at the beginning stages of this research."

An initial trial looked for the marker, called mammaglobin, in cells from the blood of healthy women with no history of breast disease and in patients with metastatic breast cancer. No mammaglobin was detected in the healthy women, but the test detected it in 70 percent of the cancer patients with metastatic disease. A retrospective study of a small group of cancer patients also indicated that the test might have provided an early warning system for two patients whose cancer had recurred.

"We found circulating cancer cells in the blood months before there was clinical documentation of the cancer's spread," Verbanac said, "and we know that the earlier you can detect the disease, the more likely it is you can intervene successfully."

A new, multi-center trial will follow 75 patients at high risk of recurrence through

regular blood tests. Any whose blood shows tumor cells on two consecutive tests will undergo a PET scan, a costly but highly sensitive method of detecting metastatic breast cancer. Ordinarily, PET scans are used only when other tests or clinical symptoms suggest the spread of cancer.

TODAY, THE RESEARCH TEAM CONTINUES TO REFINE TECHNIQUES FOR SENTINEL NODE BIOPSY AND TO SEEK OTHER EARLY DETECTION SYSTEMS FOR METASTATIC DISEASE. PRELIMINARY RESULTS INDICATE THAT A SIMPLE BLOOD TEST MAY ONE DAY PLAY A ROLE IN IMPROVING BREAST CANCER SURVIVAL.

"After they are treated, many patients at high risk of recurrence are told to watch and wait," Verbanac said. "That's very hard for patients to do. If we had a method of detecting disease before the patient had any symptoms, or before the clinical screens, we'd have a much better chance of intervening."

The studies involve collaborators in the basic sciences and clinical practice. Among those at ECU are Dr. David Pearsall, Dr. Rosa Cuenca, Dr. Ann Mannie, C. Justus Min and Dr. Melvin Swanson, as well as physicians and staff from the departments of pathology and hematology. The studies are funded by the Department of Defense and the Susan G. Komen Foundation.

In the United States, breast cancer is the most common form of cancer among women, according to the National Cancer Institute. It is estimated that more than 180,000 new cases are diagnosed across the nation each year. Over a lifetime, American women have one chance in eight of developing breast cancer. •

RATIONAL THINKING

MATHEMATICS MEETS PHILOSOPHY
IN THE SEARCH FOR AN ALGORITHM

Like a small dog with a big bone, Professor Alexandra Shlapentokh has been gnawing away at a particular problem in mathematics for 14 years, her entire life as a Ph.D.-level theoretical mathematician. Oh, she pauses to teach and work on other mathematical questions, just as the dog will sleep, eat and chase squirrels. But neither the dog nor Shlapentokh will allow much time to pass before coming back to the central challenge.

"You have to be a bit compulsive to do this," she said. "You have to carry them in your head all the time, in the subconscious, and wait for an idea to cross your path. It's always there so there's always a danger of the subconscious taking over the consciousness completely."

The problem that threatens to consume Shlapentokh boils down to this: Suppose you have an equation with multiple variables, and the constants in the equation are fractions, or rational numbers. Is there a computer program (an algorithm, to a mathematician) that, if you insert the constants, will tell you whether the equation has a solution that also is a fraction?

"Pretty much all scientists and social scientists use polynomial equations so it would be extremely useful if there were something at least to tell you there are solutions," she said. "If you know there is a solution, you can be patient enough and let the computer go through the numbers and find it. Eventually, it may not only tell you that solutions exist, but find the solutions."

Her problem derives from the work of German mathematician David Hilbert, who posed a number of questions that influenced the development of mathematics for most of the 20th century. One of those, called Hilbert's 10th problem, was similar to Shlapentokh's question but dealt with whole



Big questions in theoretical math are broken down into smaller pieces, which Alexandra Shlapentokh says is "like the blind touching an elephant and trying to figure out what it looks like."

numbers instead of fractions. It took three-quarters of a century and contributions from numerous mathematicians before Yuri Matijasevich proved in the early 1970s that no, an algorithm to solve Hilbert's 10th problem does not exist.

The question then became whether an algorithm exists for other sets of numbers, such as fractions.

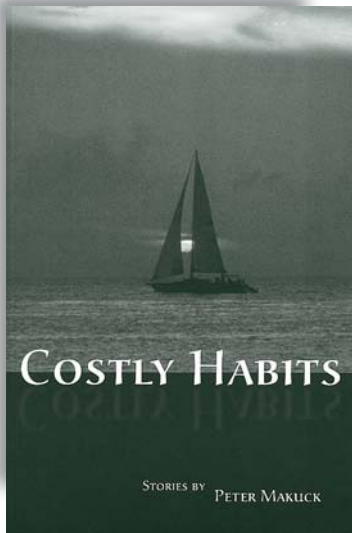
"Rational numbers are the ones we use most often in theory and practice so this is the most important and most vexing," Shlapentokh said. In the end, she and most of her colleagues believe the answer again will be no, that no algorithm can tell whether the equation will produce a solution in fractions. For Shlapentokh, that's the allure.

"My feeling is, whenever the question is interesting, there is no program," she said. "While showing it doesn't exist, you try to show *why* it doesn't. Is there a slightly easier program that does exist? This develops into a whole family of problems that are mostly of theoretical importance, where in some

sense mathematics meets philosophy. This is trying to understand the nature of objects (number sets) that on the one hand are very simple and on the other are very complicated. It's understanding the nature of rational numbers."

By breaking down the central question into smaller pieces, Shlapentokh hopes to move toward a solution but recognizes the inherent dangers. "It's like the blind touching an elephant and trying to figure out what it looks like," she said. "You get pieces, and you speculate, but you're wrong as often as you're right."

Right or wrong, a dogged determination keeps her coming back, looking to solve the next piece of the puzzle. "Eventually, you have a certain collection of tricks and insights, and you look at the problem and say what next step can I make? Is there any place I can go from here? It's not unusual (in mathematics) for the answer to be no, there's nowhere else and you should start doing something else. I haven't reached that point yet." •

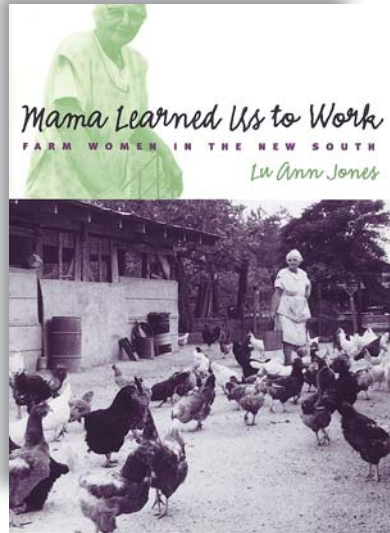


- **COSTLY HABITS** (*University of Missouri Press, 2002*) by *Peter Makuck*.

Loss, anger, fear and obsession influence the characters in this collection of short stories, which has been nominated for the 2003 PEN/Faulkner Award. Winners of the award, one of the highest literary prizes in the United States, will be announced May 17. Makuck, distinguished professor of arts and sciences, teaches in the English department.

- **FISHERS AT WORK, WORKERS AT SEA: A PUERTO RICAN JOURNEY THROUGH LABOR AND REFUGE** (*Temple University Press, 2002*) by *David Griffith and Manuel Valdes Pizzini*.

This book describes the lives of Puerto Rican fishing families, who often must supplement their income with wage work far from home. Griffith is a professor of anthropology.



- **MAMA LEARNED US TO WORK: FARM WOMEN IN THE NEW SOUTH** (*University of North Carolina Press, 2002*) by *Lu Ann Jones*.

Jones has used her collection of oral history interviews to create this portrait of early 20th-century farm women as consumers, producers and agents of economic and cultural change. Jones is an associate professor of history.

- **PHINEAS REDUX** by *Anthony Trollope* (*Penguin Classics, 2003*), edited and with an introduction by *Gregg A. Hecimovich*.

In his introduction, Hecimovich relates the political and historical background of Victorian England to the Phineas Finn novels, part of Trollope's Palliser series. This edition also contains a detailed chronology, bibliography and notes. Hecimovich is an assistant professor of English.

- **CHAOS THEORY, ASIMOV'S FOUNDATIONS AND ROBOTS, AND HERBERT'S DUNE: THE FRACTAL AESTHETIC OF EPIC SCIENCE FICTION** (*Greenwood Press, 2002*) by *Donald E. Palumbo*.

In writing about two of the most popular authors of 20th century science fiction, Palumbo proposes that both based their series on chaos theory decades before its principles were articulated in the scientific community. Palumbo is a professor of English.

- **SEARCHING FOR THE ROANOKE COLONIES: AN INTERDISCIPLINARY COLLECTION** (*N.C. Division of Archives and History, 2003*), edited by *Charles R. Ewen and E. Thomson Shields*.

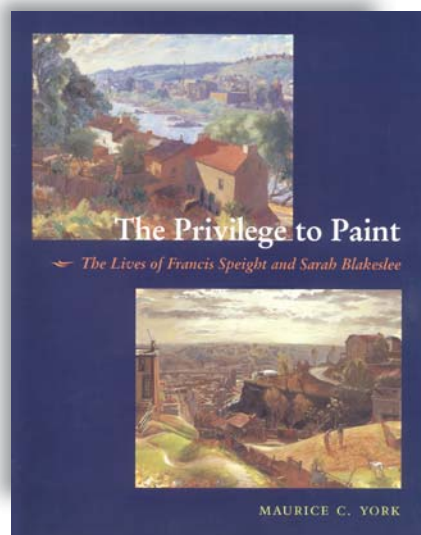
- **ARTIFACTS** (*AltaMira Press, 2003*) by *Charles R. Ewen*.

The first of these books is a collection of papers examining the Lost Colony from the perspectives of history, archaeology and folklore. The second, part of the Archaeologist's Toolkit series, explores methods and techniques used to prepare, protect and analyze artifacts in the lab. Ewen is a professor of anthropology.

- **JOURNALISM AND MASS COMMUNICATION IN AFRICA: CAMEROON** (*Lexington Books, 2002*), edited by *Festus Eribo and Enoch Tanjong*.

This book examines the development of mass communication in Cameroon since the first newspaper was established in the country in 1903. Eribo is a professor of communication and broadcasting.

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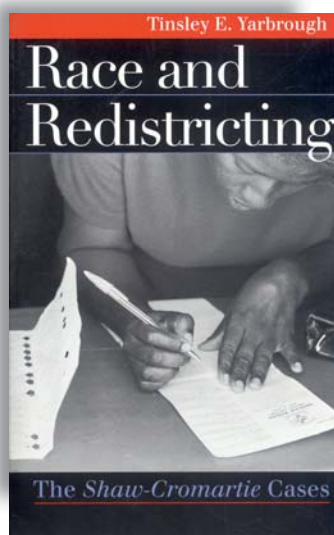


- **THE PRIVILEGE TO PAINT: THE LIVES OF FRANCIS SPEIGHT AND SARAH BLAKESLEE** (*Greenville Museum of Art, 2002*) by **Maurice C. York.**

This biography of Speight and Blakeslee, husband and wife who rank among eastern North Carolina's most noted artists, includes 83 illustrations of their work. Speight taught at ECU from 1961 until 1976. York is director of the North Carolina Studies Program.

- **SOUND SYSTEMS: EXPLICIT, SYSTEMATIC PHONICS IN EARLY LITERACY CONTEXTS** (*Stenhouse Publishers, 2003*) by **Anna Lyon and P. Moore.**

Sound Systems instructs primary grade teachers in how to design and use phonics instruction. Lyon is an assistant professor of education.



- **RACE AND REDISTRICTING: THE SHAW-CROMARTIE CASES** (*University Press of Kansas, 2002*) by **Tinsley E. Yarbrough.**

Yarbrough, professor of political science and author of a number of books on the U.S. Supreme Court and its justices, continues his study of the court with this description and analysis of a series of cases that challenged North Carolina's efforts to establish "majority-minority" voting districts.

- **LEADING WITH EMOTION: REACHING BALANCE IN EDUCATIONAL DECISION-MAKING** (*Scarecrow Press, 2002*) by **J.O. McDowelle and Kermit G. Buckner.**

This book explains theories about the role of emotion in leadership skills in the context of school systems. Buckner is a professor of education.

- **EDUCATION AS ENFORCEMENT: THE MILITARIZATION AND CORPORATIZATION OF SCHOOLS**

(*Routledge, 2003*), edited by **David A. Gabbard and K.J. Saltman.**

The articles in this book connect trends in education — heightened security, accountability and standards movements, privatization and commercialization — with corporate globalization and rising authoritarianism. Gabbard is an associate professor of education.

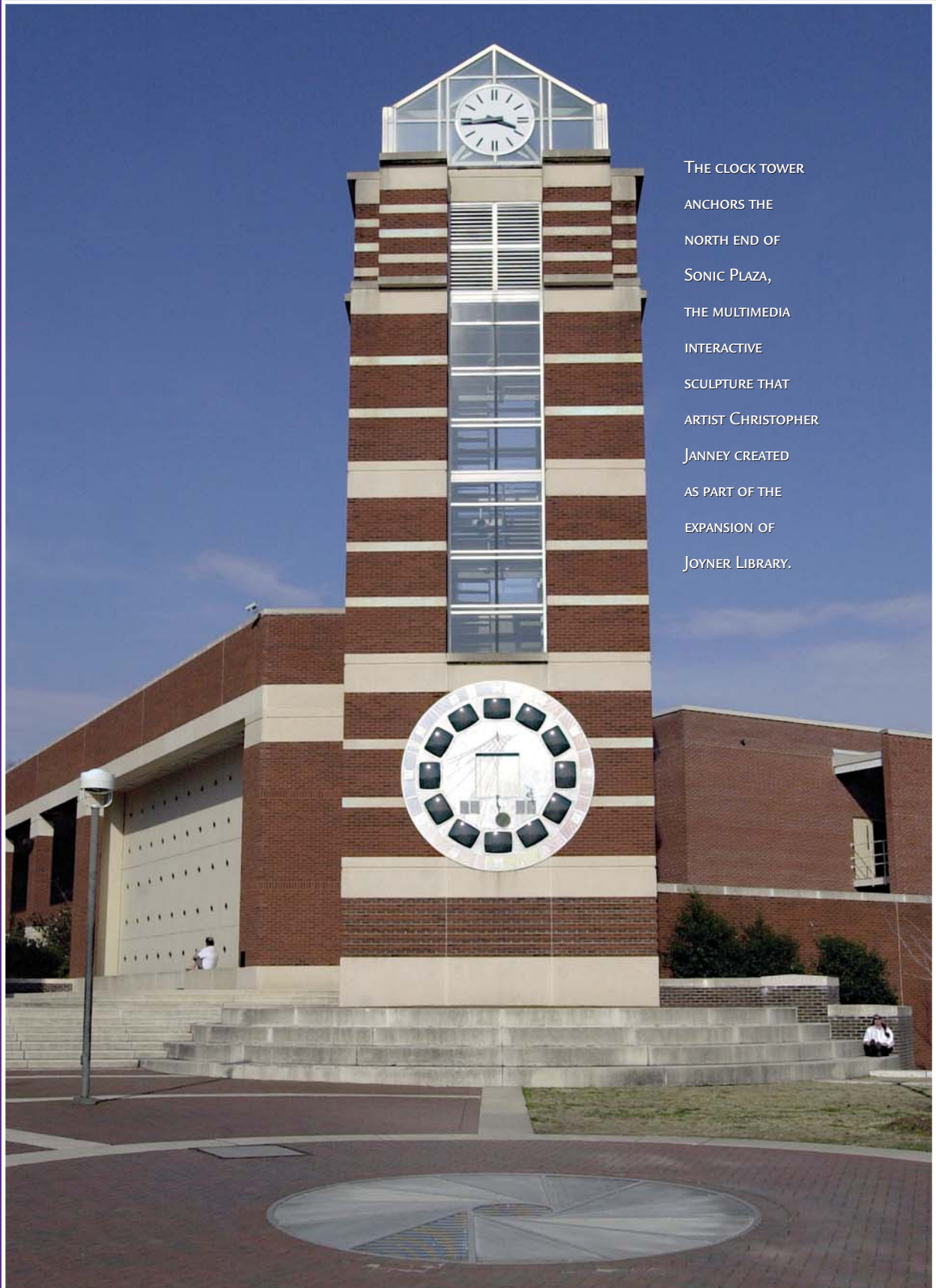
- **COUNSELING IN SCHOOLS: ESSENTIAL SERVICES AND COMPREHENSIVE PROGRAMS**

(*Allyn and Bacon, 2003*) 4th ed., by **J.J. Schmidt.**

This edition continues to stress the important historical foundations of school counseling while adding new information on the influence of technology on services for student, parents and teachers. Schmidt is a professor of education.

- **NUTRITION AND DIAGNOSIS-RELATED CARE, 5TH ED** (*Lipincott Williams & Wilkins, 2002*) by **Sylvia Escott-Stump.**

The latest edition of this resource for nutritionists and dietitians provides a concise, comprehensive reference for nutrition-based care of diseases. It includes flexible proven care plans to fit clinical settings, from hospitals and ambulatory centers to private practices and home care. Escott-Stump heads the dietetics internship program in the Department of Nutrition and Hospitality Management.



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